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SCIENCE COMICS

JANUARY Nº 1

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20. Ladies' Solitaire Engagement ring with 5 brilliant simulated diamonds in yellow gold color effect mounting.

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22. Ladies' Solitaire engagement ring. Extra large, brilliant simulated diamond. Yellow or white gold color effect.

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32a Men's Military Rings—U. S. Navy Insignia—Solid Sterling Silver—Massive design.

33. Large center simulated Ladies' Solitaire Ring. Diamond—8 smaller sized stones. Yellow or white gold color effect mounting.

34. Ladies' Ring with beautiful diamond (simulated). Yellow or white gold color effect.

35. Men's Signet Ring. White Gold color effect mountings.

36a Ladies' Dinner Ring with large, unusually clear, brilliant simulated diamond or colored stone in center surrounded by smaller stones. White gold color effect.

37a Love & Friendship Ring, unique design also used as Wedding Ring. Yellow or white gold color effect, or sterling silver.

38a Ladies' Solitaire Ring—Center stone is genuine diamond chip. Solid Sterling Silver mounting.

39. Ladies' Solitaire Ring. 3 sparkling simulated diamonds. White gold color effect mounting.

40. Men's Signet Ring, also for boys. White or yellow gold color effect mounting.

41. Ladies' Solitaire Ring with large center simulated diamond and 6 smaller stones. Yellow or white gold color effect mounting.

42a Hand Clasp Love & Friendship ring. Rings come apart to form 2 rings. Made of sterling silver.

43a Ladies' Wedding Band 7 large brilliant simulated diamonds. White or yellow gold color effect mounting, or sterling silver.

44a Men's Wedding Ring. Yellow or white gold color effect, or sterling silver.

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46a

47. Men's ring with square cut simulated garnet. Yellow or white gold color effect mounting.

48. Wedding Band. Set with sparkling simulated diamonds. White or yellow gold color effect mounting, or sterling silver.

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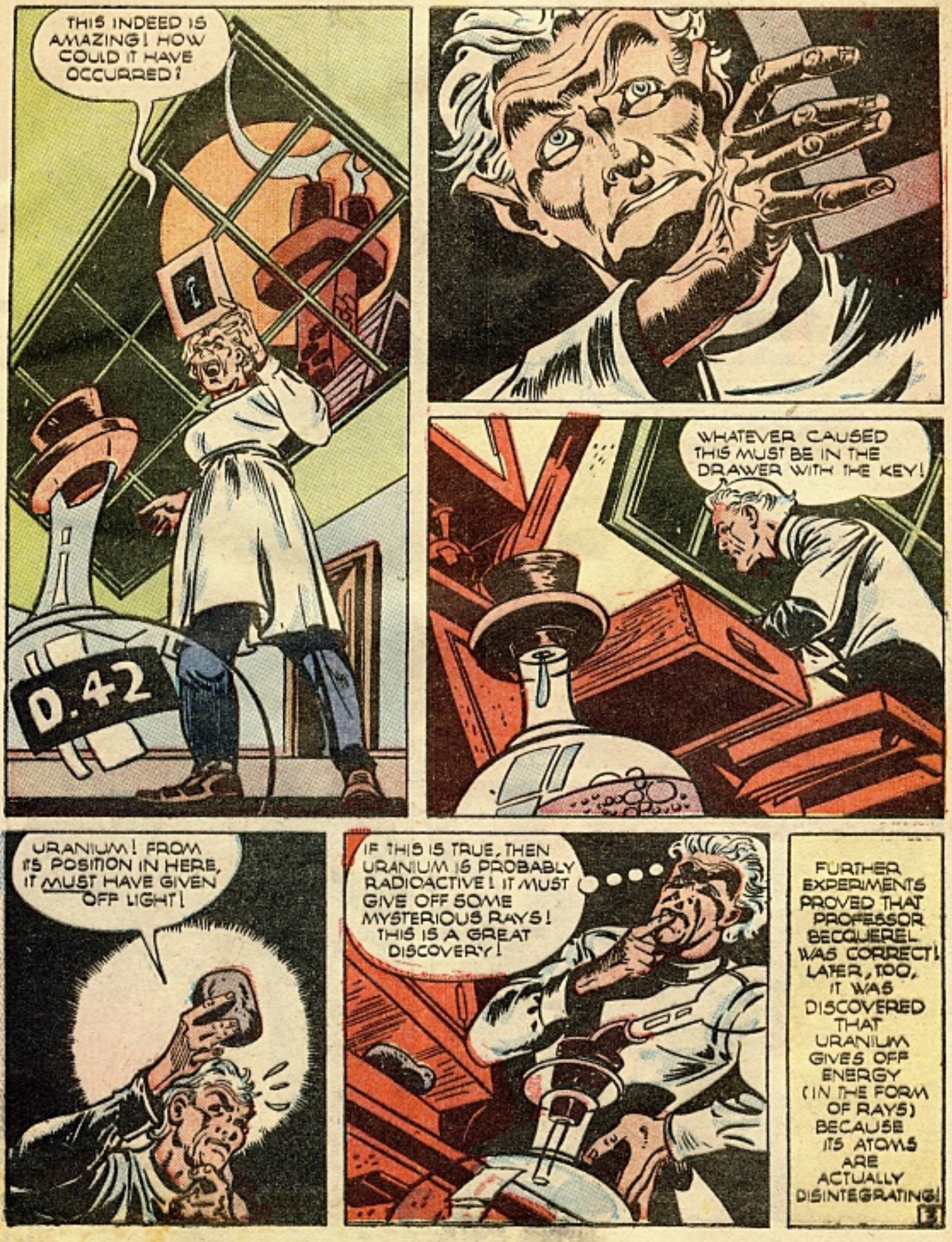
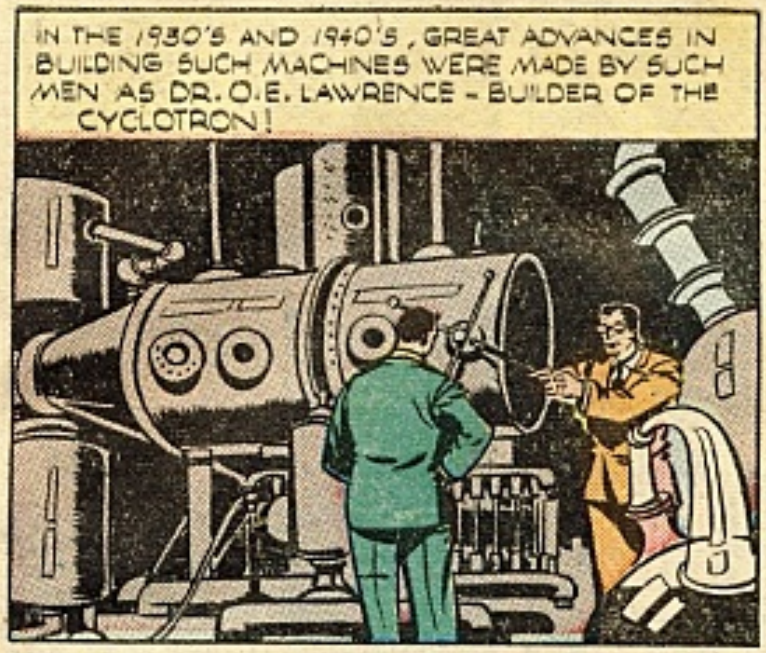
THE BOMB THAT WON THE WAR

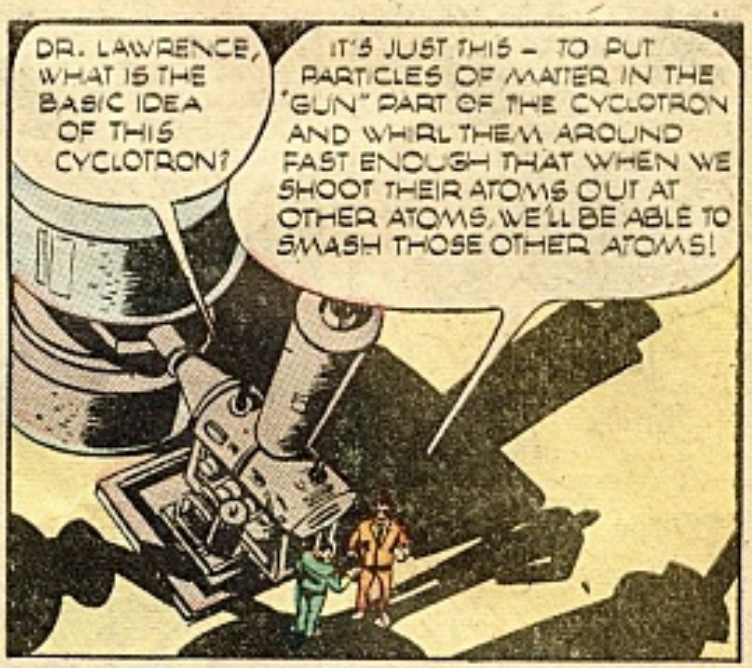
ON AUGUST 5, 1945, A SINGLE BOMB FROM A SINGLE B-29 DEVASTATED THE JAPANESE CITY OF HIROSHIMA - AND WITH ITS DETONATION THE WORLD ENTERED A NEW ERA: THE ATOMIC AGE! HERE IS THE MOMENTOUS STORY OF THE ATOM WHOSE ENERGY SCIENCE RELEASED AND HARNASSED TO MAKE THAT BOMB POSSIBLE!

1896 - THE LABORATORY OF PROFESSOR ANTOINE HENRI BECQUEREL, IN PARIS....
STRANGE ELEMENT, THIS URANIUM! WHO KNOWS WHAT SECRETS MAY BE LOCKED WITHIN ITS ATOMS?
AH, WELL! PERHAPS IT IS FOR YOUNGER MINDS TO DISCOVER! I'LL JUST DROP THIS SAMPLE INTO THE DRAWER!
PROFESSOR BECQUEREL PLACED THE URANIUM IN A DRAWER CONTAINING SOME PHOTOGRAPHIC PLATES AND A METAL KEY, A COINCIDENCE OF VAST IMPORTANCE!
SOME TIME LATER....
THIS IS STRANGE! THE PHOTOGRAPHIC PLATES SEEM TO HAVE BEEN FOGGED BY LIGHT! HOW CAN THAT BE?
THE PLATES ARE RUINED, OF COURSE, BUT I'M GOING TO DEVELOP THEM ANYWAY!
NOW! WE SHALL SOON SEE WHAT WE HAVE ON THESE PLATES!


THIS INDEED IS AMAZING! HOW COULD IT HAVE OCCURRED?
D.42
WHATEVER CAUSED THIS MUST BE IN THE DRAWER WITH THE KEY!
URANIUM! FROM ITS POSITION IN HERE, IT MUST HAVE GIVEN OFF LIGHT!
IF THIS IS TRUE, THEN URANIUM IS PROBABLY RADIOACTIVE! IT MUST GIVE OFF SOME MYSTERIOUS RAYS! THIS IS A GREAT DISCOVERY!
FURTHER EXPERIMENTS PROVED THAT PROFESSOR BECQUEREL WAS CORRECT! LATER, TOO, IT WAS DISCOVERED THAT URANIUM GIVES OFF ENERGY (IN THE FORM OF RAYS) BECAUSE ITS ATOMS ARE ACTUALLY DISINTEGRATING!

THEN, IN 1905, PROFESSOR ALBERT EINSTEIN EVOLVED HIS FAMOUS EQUATION!
AS YOU KNOW, GENTLEMEN, MY THEORY IS THAT MATTER AND ENERGY ARE INTERCHANGEABLE! IN OTHER WORDS, ONE CAN BE TURNED INTO THE OTHER!
THIS EQUATION PROVES THAT THE ENERGY PROVIDED BY A CERTAIN AMOUNT OF MATTER IS EQUAL TO THE MASS INVOLVED, MULTIPLIED BY THE SQUARE OF THE VELOCITY OF LIGHT!
E=MC2
IF PROFESSOR EINSTEIN IS RIGHT, THEN THE ANNIHILATION OF A SMALL PARTICLE OF MATTER WOULD PRODUCE A TREMENDOUS AMOUNT OF ENERGY!
YES! AFTER ALL, THE VELOCITY OF LIGHT IS 186,000 MILES PER SECOND, AND WHEN YOU SQUARE THAT YOU GET AN EVEN GREATER FIGURE!
WHAT SOMEBODY WILL HAVE TO DO IS BUILD A MACHINE THAT'S CAPABLE OF SMASHING ATOMS! AND THAT'S A MAN-SIZE JOB!
BUT I DON'T THINK IT'LL BE MANY YEARS UNTIL THAT JOB WILL BE DONE!
FOR INSTANCE, IF YOU COULD SMASH PARTICLES THAT ARE SO SMALL THAT A MILLION OF THEM WOULD REST ON A PERIOD AT THE END OF A SENTENCE, THE ENERGY RELEASED WOULD NEVERTHELESS BE UNBELIEVABLY GREAT!
4


IN THE 1930'S AND 1940'S, GREAT ADVANCES IN BUILDING SUCH MACHINES WERE MADE BY SUCH MEN AS DR. O.E. LAWRENCE - BUILDER OF THE CYCLOTRON!


DR. LAWRENCE, WHAT IS THE BASIC IDEA OF THIS CYCLOTRON?
IT'S JUST THIS - TO PUT PARTICLES OF MATTER IN THE "GUN" PART OF THE CYCLOTRON AND WHIRL THEM AROUND FAST ENOUGH THAT WHEN WE SHOOT THEIR ATOMS OUT AT OTHER ATOMS, WE'LL BE ABLE TO SMASH THOSE OTHER ATOMS!

I DON'T QUITE UNDERSTAND IT! JUST HOW DOES AN ATOM LOOK, ANYWAY?
SCIENTISTS HAVE NEVER ACTUALLY SEEN ONE BECAUSE THEY'RE TOO SMALL! BUT FROM CERTAIN EXPERIMENTS WE'VE MADE, WE KNOW WHAT IT WOULD LOOK LIKE IF WE COULD SEE IT UP CLOSE!

HEY! IT'S DOCTOR LAWRENCE THE ATOM SMASHER!
HELLO, FELLOWS! MIND IF I BORROW THESE MARBLES A MINUTE?

I THINK I CAN SHOW YOU WHAT AN ATOM LOOKS LIKE WITH THESE MARBLES!

THE CIRCLE OF MARBLES REPRESENTS THE ELECTRONS WHICH CIRCLE AROUND THE NUCLEUS OF THE ATOM! THE CLUSTER MARBLES IN THE CENTER REPRESENT THE NUCLEUS, WHICH IS MADE UP OF PARTICLES CALLED PROTONS AND NEUTRONS!
5

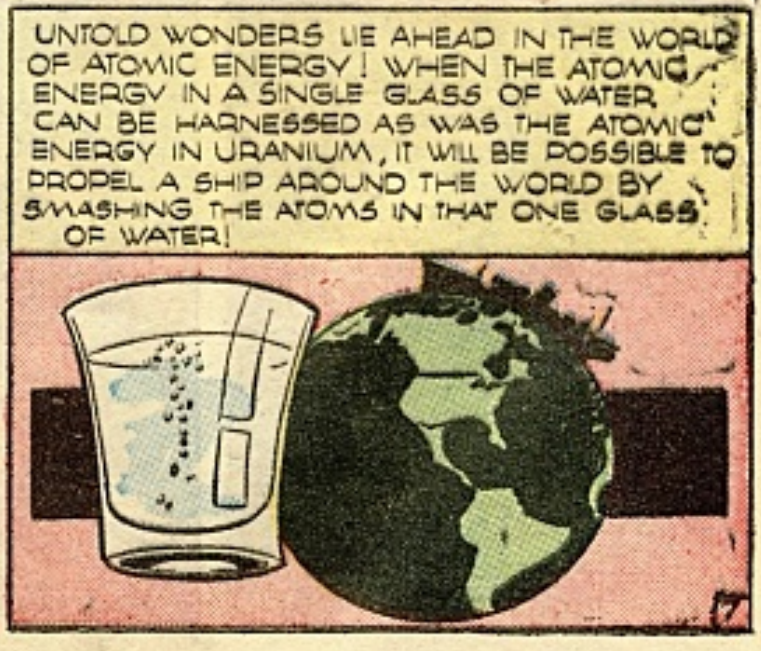
I GET IT! PROTONS ARE POSITIVELY CHARGED PARTICLES AND NEUTRONS ARE NEUTRAL.. THEY HAVE NO ELECTRICAL CHARGE!
CORRECT! NOW, LET ME TAKE A HANDFUL OF MARBLES HERE!
NOW SUPPOSE THESE MARBLES REPRESENT NEUTRON PARTICLES OF ANOTHER ELEMENT! HERE'S WHAT WE MEAN BY SMASHING THE ATOM!
WE TOSS THESE PARTICLES INTO THE NUCLEUS OF THE ATOM WE WANT TO SMASH ... LIKE THIS!
THIS SIMPLE GAME DEMONSTRATES THE BASIC PRINCIPLE OF MACHINES LIKE THE CYCLOTRON WHICH ARE DESIGNED TO SMASH ATOMS!
ACTUALLY, IN ATOM SMASHING MACHINES, IT TAKES A MILLION OF THE NEUTRON "BULLETS" TO SCORE ONE HIT ON AN ATOM OF URANIUM. THE URANIUM ATOMS THEN SPLIT IN TWO AND SET OFF OTHER ATOMS.
EXPLODING URANIUM ATOMS ARE LIKE A STRING OF FIRECRACKERS TIED TOGETHER WITH LONG FUSES. AFTER THE FIRST ONE EXPLODES, IT SETS OFF THE OTHERS IN RAPID SUCCESSION!
6

WITH THE OUTBREAK OF THE WAR, LED BY SUCH MEN AS DR. VANNEVAR BUSH (ABOVE) ALLIED SCIENTISTS SPED UP THE SCIENCE OF ATOM-SMASHING!

UNDER GOVERNMENT SPONSORSHIP, HUGE PLANTS WERE BUILT IN TENNESSEE, WASHINGTON, AND NEW MEXICO TO CARRY OUT THIS SECRET WORK!

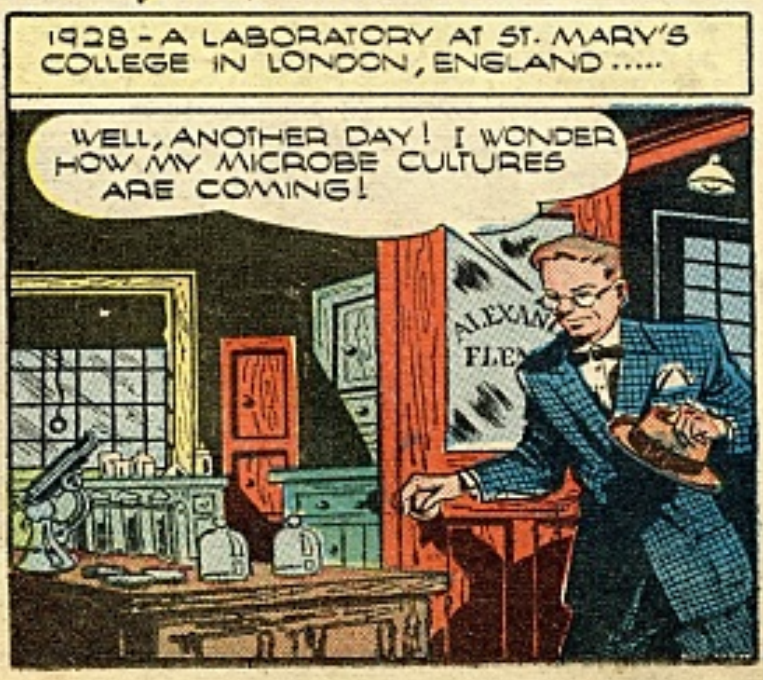
FINALLY, ONE DAY IN MID-1945, THE FIRST BOMB WAS ATTACHED TO A STEEL TOWER IN THE GREAT DESERT WASTES OF NEW MEXICO...
IT WON'T BE LONG NOW! IF OUR BOMB WORKS, IT'S THE BEGINNING OF THE END OF JAPAN!
AND WHEN THAT BOMB EXPLODES, I'M GOING TO BE AT LEAST TEN MILES AWAY FROM HERE - AND SO HAD EVERYBODY ELSE BETTER BE!

BY NOW, EVERYONE KNOWS OF THE TREMENDOUS EXPLOSION THAT OCCURRED THAT DAY - A PRELUDE TO THE DROPPING OF THE FIRST ATOMIC BOMB ON JAPAN!
BOOM

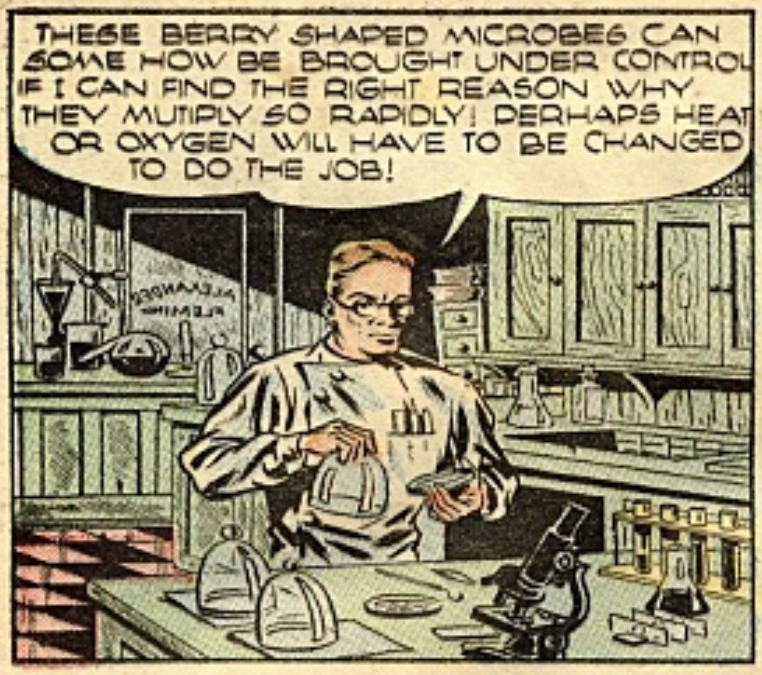

UNTOLD WONDERS LIE AHEAD IN THE WORLD OF ATOMIC ENERGY! WHEN THE ATOMIC ENERGY IN A SINGLE GLASS OF WATER CAN BE HARNESSED AS WAS THE ATOMIC ENERGY IN URANIUM, IT WILL BE POSSIBLE TO PROPEL A SHIP AROUND THE WORLD BY SMASHING THE ATOMS IN THAT ONE GLASS OF WATER!

AUGUST 5, 1945 - A B-29 ROARS DOWN THE RUNWAY AT AN AIR BASE IN THE PACIFIC
THERE SHE GOES! CROSS YOUR FINGERS!
THE JAPS BETTER CROSS THEIR FINGERS!
WHILE INSIDE THE SHIP, COLONEL TUTTLE SITS AT THE CONTROLS.....
WE'VE GOT TO KEEP A CONSTANT CHECK ON ALL INSTRUMENTS! THIS IS ONE MISSION THAT HAS TO GO LIKE CLOCKWORK!
THEN, HIGH OVER HIROSHIMA ... THE FIRST ATOMIC BOMB DESCENDS BY PARACHUTE!
BOMBS AWAY!
BOYS, LET'S GET OUT OF HERE FAST! EVEN ALTITUDE WON'T SAVE US FROM THE BLAST UNLESS WE'RE MILES AWAY BEFORE THE SPECIAL TIMER ON THAT BOMB CUTS LOOSE!
SEVERAL MINUTES LATER.....
THERE SHE GOES! LOOK AT THAT TOWER OF SMOKE IT SENT UP! IT'S AT LEAST 40,000 FEET HIGH!
GOOD-BYE, JAPS! IF THEY DON'T SURRENDER AFTER THIS WE'LL WIPE THEM OFF THE EARTH!
THUS, THE ATOMIC BOMB - SUPREME ACHIEVEMENT OF MODERN SCIENCE - SOON BROUGHT ABOUT THE SURRENDER OF JAPAN AND THE END OF THE GLOBAL CONFLICT! IN THE HANDS OF THE PEACE-LOVING NATIONS OF THE EARTH, ATOMIC ENERGY WILL HELP BUILD A NEW WORLD FAR MORE WONDERFUL THAN MAN EVER DREAMED A FEW BRIEF YEARS AGO!

WHITE MAGIC
THE MIRACLE OF PENICILLIN
HOW AN ACCIDENT IN AN ENGLISH LABORATORY RESULTED IN ONE OF THE GREATEST— PERHAPS THE GREATEST— MEDICAL DISCOVERIES OF ALL TIMES .....!


1928 - A LABORATORY AT ST. MARY'S COLLEGE IN LONDON, ENGLAND .....
WELL, ANOTHER DAY! I WONDER HOW MY MICROBE CULTURES ARE COMING!

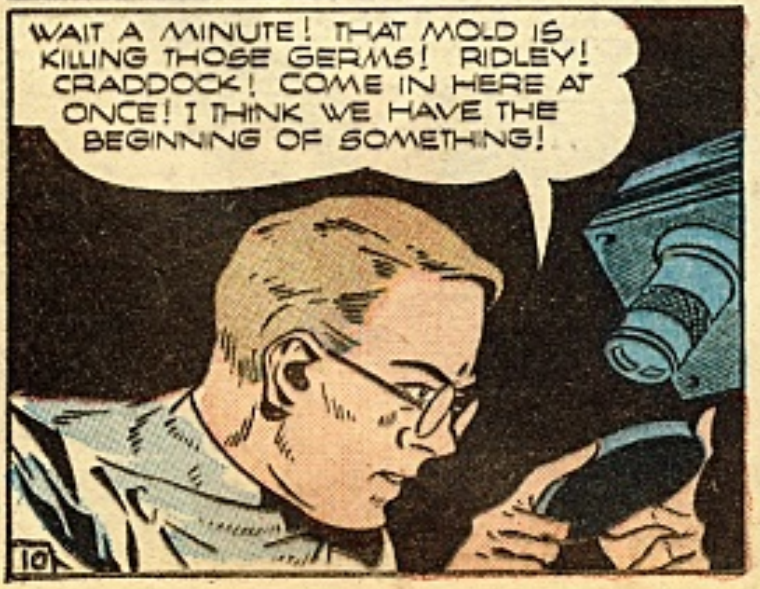
IF I CAN FIND A WAY TO RENDER THESE STAPHYLOCOCCIC GERMS HARMLESS, I'LL HAVE A CURE FOR BOILS AND BLOOD POISONING!


THESE BERRY SHAPED MICROBES CAN SOME HOW BE BROUGHT UNDER CONTROL IF I CAN FIND THE RIGHT REASON WHY THEY MUTIPLY SO RAPIDLY! PERHAPS HEAT OR OXYGEN WILL HAVE TO BE CHANGED TO DO THE JOB!

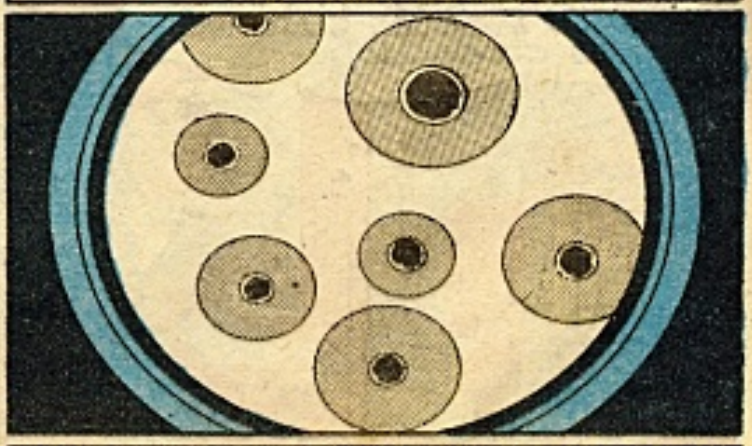
IF I CAN ALTER A MICROBE, PULL ITS FANG, SO TO SPEAK - IT'S POSSBLE TO MAKE HARMLESS SISSIES OUT OF THESE DEADLY KILLERS! I'LL HAVE A LOOK AT THIS UNDER THE MICROSCOPE!

DARN IT! THIS HAS HAPPENED BEFORE! A PIECE OF MOLD HAS BLOWN IN THE WINDOW AND SETTLED ON MY CULTURE OF BACTERIA! IT'S RUINED NOW FOR EXPERIMENTAL PURPOSES!

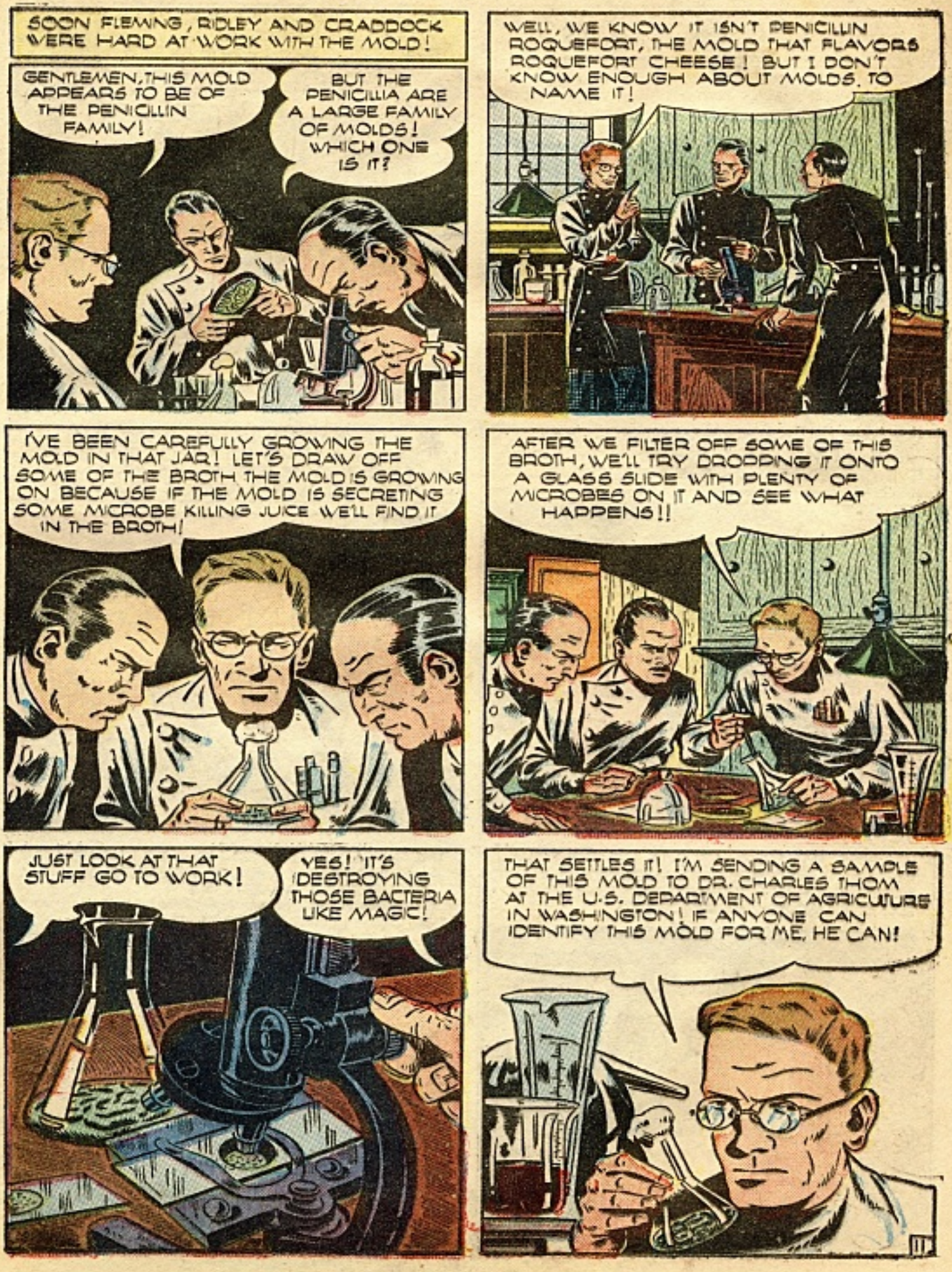
BUT AS ALEXANDER FLEMING LOOKED CLOSER AT THE DISH.....!


WAIT A MINUTE! THAT MOLD IS KILLING THOSE GERMS! RIDLEY! CRADDOCK! COME IN HERE AT ONCE! I THINK WE HAVE THE BEGINNING OF SOMETHING!

THE RINGS ON THE PLATE SHOW WHAT ALEXANDER FLEMING SAW --- THE MYSTERIOUS MOLD IS DISSOLVING THE MAN-KILLING GERMS!



HERE WAS THE DRAMATIC BEGINNING OF THE DISCOVERY OF PENICILLIN!


SOON FLEMING, RIDLEY AND CRADDOCK WERE HARD AT WORK WITH THE MOLD!
GENTLEMEN, THIS MOLD APPEARS TO BE OF THE PENICILLIN FAMILY!
BUT THE PENICILLIA ARE A LARGE FAMILY OF MOLDS! WHICH ONE IS IT?
WELL, WE KNOW IT ISN'T PENICILLIN ROQUEFORT, THE MOLD THAT FLAVORS ROQUEFORT CHEESE! BUT I DON'T KNOW ENOUGH ABOUT MOLDS TO NAME IT!
I'VE BEEN CAREFULLY GROWING THE MOLD IN THAT JAR! LET'S DRAW OFF SOME OF THE BROTH THE MOLD IS GROWING ON BECAUSE IF THE MOLD IS SECRETING SOME MICROBE KILLING JUICE WE'LL FIND IT IN THE BROTH!
AFTER WE FILTER OFF SOME OF THIS BROTH, WE'LL TRY DROPPING IT ONTO A GLASS SLIDE WITH PLENTY OF MICROBES ON IT AND SEE WHAT HAPPENS!!
JUST LOOK AT THAT STUFF GO TO WORK!
YES! IT'S DESTROYING THOSE BACTERIA LIKE MAGIC!
THAT SETTLES IT! I'M SENDING A SAMPLE OF THIS MOLD TO DR. CHARLES THOM AT THE U.S. DEPARTMENT OF AGRICULTURE IN WASHINGTON! IF ANYONE CAN IDENTIFY THIS MOLD FOR ME, HE CAN!

SHORTLY AFTERWARD, DR. THOM RECEIVED A SAMPLE OF THE MOLD IN THE U.S.A.

THOSE ENGLISH FELLOWS ARE ON THE RIGHT TRACK, ALL RIGHT! THIS MOLD IS PENICILLIN - BUT NOT P. RUBRUM!

ACTUALLY THIS IS P. NOTATUM--- ALTHOUGH FLEMING IS PERFECTLY WITHIN HIS RIGHTS IN NAMING HIS MOLD EXTRACT PENICILLIN!

MEANTIME, VARIOUS SCIENTISTS HERE AND IN ENGLAND CARRIED ON THEIR EXPERIMENTS WITH THE NEW DRUG ----

THESE MICE ARE ALL FULL OF PNEUMONIA GERMS BUT AN INOCULATION OF PENICILLIN SHOULD KILL THOSE GERMS, JUST AS IT DID BEFORE!

AS THE YEARS WENT BY, MORE AND MORE WAS LEARNED ABOUT PENICILLIN BY STUDYING ITS EFFECTS ON ANIMALS INOCULATED WITH VARIOUS GERMS!!

BY 1941, SMALL AMOUNTS OF PENICILLIN WERE AVAILABLE FOR WOUNDED ALLIED SOLDIERS - BUT ONLY ENOUGH FOR EXPERIMENTAL PURPOSES!

THIS BOY WILL GET WELL I BELIEVE IF WE ONLY HAD MORE PENICILLIN!

THEN, IN ENGLAND, DR. HOWARD FLOREM AND NORMAN HEATLY PREPARE TO LEAVE FOR AMERICA!

THE ONLY HOPE FOR LARGE SCALE PRODUCTION OF PENICILLIN LIES IN THE POWER OF AMERICA'S GREAT INDUSTRIES!

RIGHT! AND THE SOONER WE GET THERE TO SEE WHAT WE CAN DO TO PROMOTE IT, THE MORE OUR SOLDIERS LIVES WILL BE SPARED!

THE TWO BRITISH SCIENTISTS CALLED ON DR. THOM IN WASHINGTON!

DR. THOM, WE THINK THIS PENICILLIN PROJECT SHOULD BE PUSHED AS FAST AS POSSIBLE! HOW CAN WE GO ABOUT DOING IT

I SUGGEST YOU GO TO THE AGRICULTURAL DEPARTMENT'S RESEARCH LABORATORY IN PEORIA, ILLINOIS! THEY HAVE EVERYTHING YOU'LL NEED!

OUT THERE THEY HAVE THE BEST MICROBES IN THE WORLD! AND SINCE MANY AMERICAN DRUG HOUSES ARE ALREADY INTERESTED IN PENICILLIN, PERHAPS YOU CAN INTEREST THEM IN THE PROBLEM OF MASS PRODUCING THE STUFF! AT ANY RATE, GO TO PEORIA AND WORK ON IT!

LATER IN PEORIA -- THE MEN TALKED TO DR. ROBERT D. GOGHILL -----

DR. GOGHILL, I THINK WE ALL AGREE ON ONE THING THEN!

YES! PENICILLIN MOLD MUST BE FED ON A BETTER DIET TO PRODUCE MORE PENICILLIN AND A BETTER STRAIN OF FLEMING'S MOLD SHOULD BE FOUND!

BEFORE LONG, ORDERS HAD GONE OUT TO OUR AIR FORCES ALL OVER THE WORLD...

HEY, ARE YOU NUTS? WHAT ARE YOU DOING, PUTTING CHINESE DIRT IN A BOTTLE?

SOME GUYS BACK IN THE STATES WANT TO EXAMINE THE BUGS IN IT!

I STILL DON'T GET IT! WHAT FOR? AIN'T BUGS IN THE STATES GOOD ENOUGH?

THEY FIGURE THEY'LL SAMPLE MICROBES FROM ALL OVER THE WORLD AND MAYBE FIND SOME THAT WILL MAKE BETTER MOLD FOR PENICILLIN!

FUNNY STUFF, THAT - ER - AH - HOW DID YOU PRONOUNCE IT, LIEUTENANT?

IT'S PRONOUNCED PENNY-SILL-IN AND YOU'RE RIGHT IT'S FUNNY STUFF! BUT IT MIGHT TURN OUT TO BE THE BEST STUFF YOU EVER SAW!

WHILE SAMPLES OF SOIL FROM ALL OVER THE EARTH WERE BEING EXAMINED ---

MUSTN'T FORGET TO PICK UP SOME FRUIT FOR DINNER TONIGHT!

THIS CANTALOUPE LOOKS PRETTY GOOD! GUESS I'LL BUY IT!

HM! INTERESTING MOLD ON THIS ONE! THINK I'LL PUT IT UNDER THE MICROSCOPE INSTEAD OF EATING IT!

BUT WHILE SAMPLES OF DIRT FROM ALL OVER THE EARTH SHOWED NOTHING EXCITING, ONE OF THE TWO BEST STRAINS OF PENICILLIN WAS DEVELOPED FROM THE CANTALOUPE!

THESE NEW STRAINS OF PENICILLIN ARE THE ANSWERS TO OUR PRAYERS! ONE OF THEM WILL GROW SUBMERGED INSTEAD OF ONLY ON THE TOP OF THE BROTH! THAT MEANS IT CAN BE MADE IN LARGE TANKS OR VATS!

THE TIME HAS COME TO ASK THE BIG DRUG COMPANIES - AND THE U.S. GOVERNMENT TO GO INTO THE MANUFACTURE OF PENICILLIN IN A BIG WAY!

THE DRUG MANUFACTURERS EXPRESSED DEEP INTEREST!

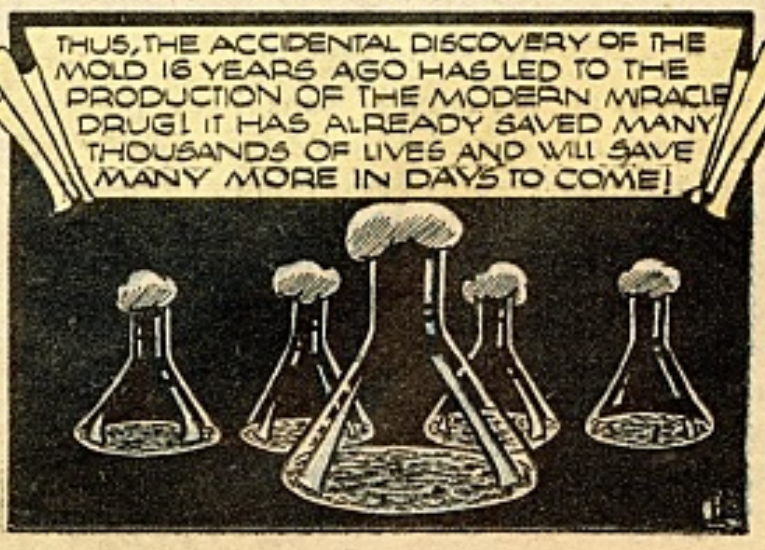
OF COURSE, WE REALIZE THAT YOUR COMPANIES STAND TO LOSE A LOT OF MONEY MAYBE WE'LL FIND OUT HOW TO MAKE PENICILLIN SOME OTHER WAY - SYNTHETICALLY!

THAT'S RIGHT! BUT IT'S MANUFACTURE IN LARGE QUANTITIES IS SO IMPORTANT TO SAVING THE LIVES OF SOLDIERS AND CIVILIANS THAT OUR COMPANY IS READY TO INVEST $3,000,000 IN A BIG PLANT!

MODERN PLANTS PRODUCING PENICILLIN ARE MORE SANITARY THAN ANY OPERATING ROOM! MICROBE-DESTROYING ULTRA-VIOLET LAMPS HELP IN THIS ESSENTIAL WORK, AS PICTURED BELOW IN A PENICILLIN BOTTLING ROOM!

SOON GIANT PLANTS WERE TURNING OUT THE MIRACLE DRUG! OVER $20,000,000 HAS BEEN SPENT TO BUILD PLANTS LIKE THIS ONE .....

THUS, THE ACCIDENTAL DISCOVERY OF THE MOLD 16 YEARS AGO HAS LED TO THE PRODUCTION OF THE MODERN MIRACLE DRUG! IT HAS ALREADY SAVED MANY THOUSANDS OF LIVES AND WILL SAVE MANY MORE IN DAYS TO COME!



All Of Us Are

By Joseph

SOME of the things—indeed, many of the things!—scientists are doing these days (to say nothing of their accomplishments in the past) may seem like nothing short of magic to some folks. But the plain truth of the matter is, there nothing "magical" about them, speaking in the true sense of the word.

With very few exceptions, all the things that science has done for mankind as far back as we have records, have been done by men who deliberately set out to accomplish some definite purpose and in so doing have almost always arrived at this purpose simply through following through with what we might term "reasoning" or "logic."

But there is nothing unusual about these thought processes that we all don't go through in our minds every single day of the year. To illustrate this point, let's take a very simple example.

Suppose your mother comes into the kitchen and notices that the cupboard door is wide open. Then she sees that the cookie jar is half empty. Furthermore, there is the mark of a slightly dirty hand left on the edge of the open door. What is her immediate conclusion?

"Somebody has opened that door, taken some cookies, and left!" she says. But, why does she say this? Because, to begin with, there are certain fundamental facts that she knows already to be indisputable.

First of all, her mind reasons that cupboard doors do not open by themselves. Secondly, she knows that—only a few minutes ago—the cookie jar was filled and now it isn't. Thirdly, there is that tell-tale hand mark left on the door. The obvious conclusion, then, is that someone opened the door, took out the cookies, left an imprint of a hand on the door and—since nobody is now within her sight in the kitchen—they must necessarily have gone away.

Somebody might ask here, "But maybe the wind from the open door blew the cupboard door open. Couldn't that be?" And you would say: "Yes, it might be! But the wind didn't take the cookies from the jar!"

The next question might follow: "But couldn't something else besides a human being have taken the cookies?"

And the answer, scientifically but not too probably might be: "Yes. Something else may have removed the cookies, because I didn't actually see them being removed! However, if it were, for example, a monkey which removed the cookies, why is the imprint of a human hand on the door? In all our previous experiences, we have found that monkeys do not leave human prints!"

SO YOU come to the conclusion, if you are a mother in search of some missing cookies, that someone—a human!—stole the cookies. Now, this is what scientists call: "forming a hypothesis." In other words, we have a chain of fairly evident facts upon which to base our case.

Suppose, further, that there is a youngster in the house and that he or she has been known to "lift" a few cookies before. If, in tracking down the little culprit, he is discovered in the act of munching on some cookies, the logical thing to conclude is that you have arrived at the solution to the problem.

Now let's look at Sir Isaac Newton, who watched an apple fall and thereby formed his "theory of gravity." His mind went through much the same basic chain of events that the harassed mother's went through. He reasoned that since the apple fell down—and not up!—and that since in all man's experiences all the apples in the world have always fallen down and not up, then there must be some-

Scientists!

Blair

thing that causes this to happen regularly. This mysterious force he called gravity and formed his since proven theory that "everything that goes up must come down"!

Of course, a scientist setting out to prove that there are sun-spots on the sun caused by certain whorls of molten metals that are being drawn back into the sun, cannot start his chain of evidence just by assuming that this is so. He must start with a basic hypothesis that these whirlpools on the sun are really whirlpools and that they are really formed of molten metals.

Unless other men before him—or he himself—have proved that this is so, he had better start with some other hypothesis about the sun that is even more basic than this.

However, Samuel Pierpont Langley, the great American scientist who died in 1906, did arrive at such a conclusion about the spots on the sun. And it was not until years later that another scientist with a modern machine (George Ellery Hale and his invention of the spectroheliograph) proved conclusively that Langley had been absolutely right! But note that there is a difference between coming to a conclusion (as Langley did) and of obtaining definite proof such as Hale's.

NEVERTHELESS, the thought processes of these men were very similar to the thought processes we outlined in the recovery of the missing cookies. The only difference being in the intricateness of solving such problems as the mysterious sun spots as against the mysterious missing cookies.

Speaking of Sir Isaac Newton and his falling apple, as we were a moment ago, might afford us another simple example of the parallel between the thought processes of the great men of science and those thought chains we all must use in every-day life.

Suppose you saw an apple drop, picked it up and took a bite from it. A moment later you toss away the apple in disgust because you found that it was very sour and unpleasant to the taste.

Now, sometime later, you happened to pick up another apple at the grocers and you noticed that it looked very much like the apple you saw fall from the tree. This one is, let us say, hard and green to the touch and the sight. Then you bite into this second apple and discover that it is also very sour to the taste.

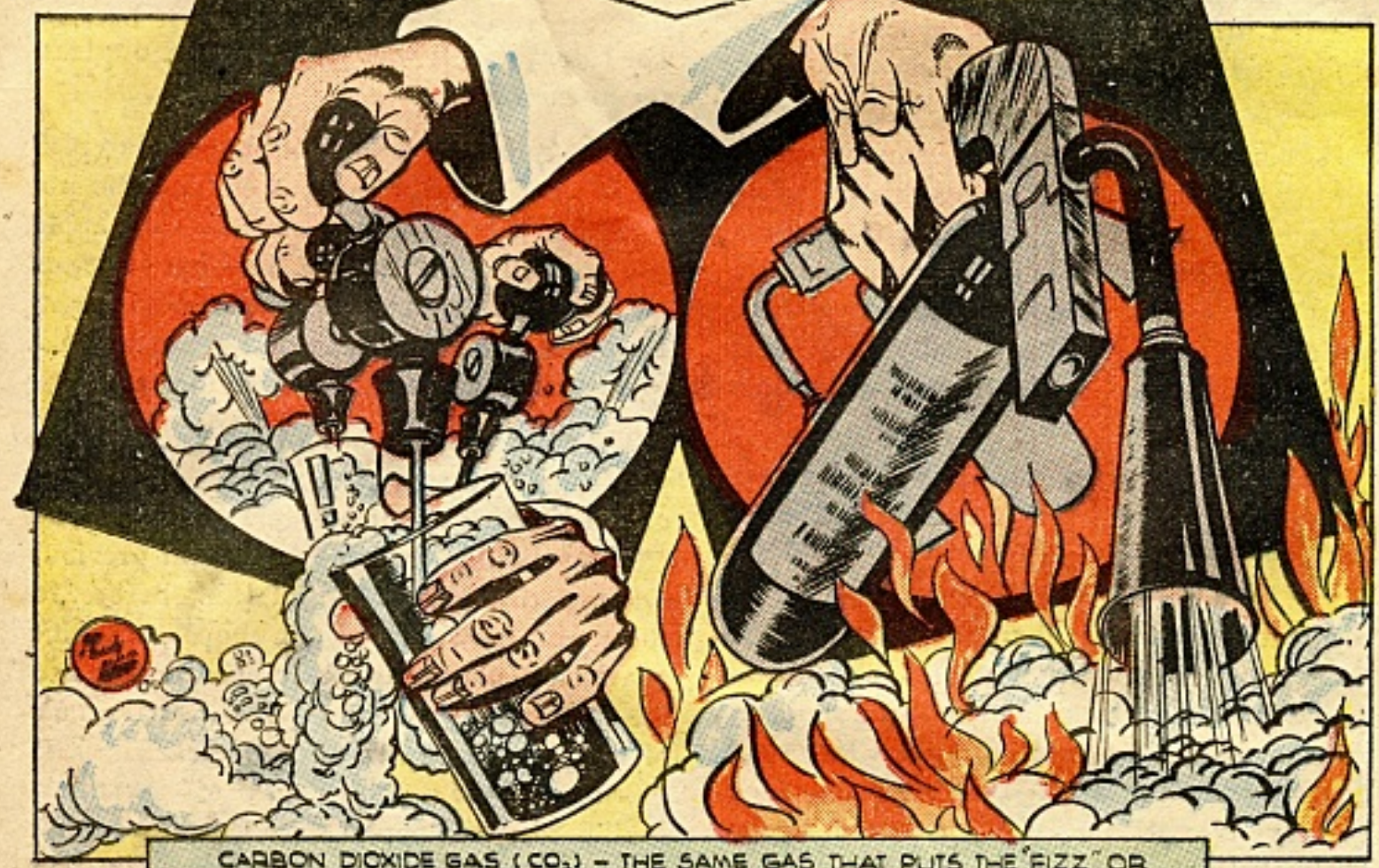
The third time you see a hard, green apple, your mind will say: "I don't have to bite this one! I know it's sour before I taste it!" You are now basing your conclusion on previous evidence that has proved infallible before. In short, you have arrived at a simple, scientific conclusion. Naturally, if you had the time and the inclination, you might sample thousands of hard, green apples from North Dakota to Normandy, and if you found that—invariably—all hard, green apples were sour, it wouldn't be necessary to question that point again. You have proved that this is so, scientifically!

Perhaps, years later, when you had broken down the hard, green apples in your laboratory and found them to be composed of certain elements in proportions not found in other apples, you would have advanced a step farther in your scientific knowledge of hard, green apples—and you would be known as a world authority on them.

Certainly, these simple examples are not as complex as, for example, measuring the heat of the sun to one millionth of one degree, but they follow along the same logical, scientific steps.

Thus we see that each and everyone of us uses the methods of science in our every-day lives. We are all, truly, scientists!

HOW 'SODA POP' GAS FIGHTS FIRE



CARBON DIOXIDE GAS (CO_2) – THE SAME GAS THAT PUTS THE "FIZZ" OR SPARKLE IN SOFT DRINKS – IS THE SAME GAS THAT SMOTHERS FIRES SO EFFECTIVELY IN AIRPLANES, SHIPS, FACTORIES, ETC. THE FOLLOWING STORY OF CO_2 IS BASED ON MATERIAL FURNISHED SCIENCE COMICS BY WALTER KIDDE & CO., INC. – ONE OF THE WORLD'S LARGEST PRODUCERS OF THIS VALUABLE AID TO FIREFIGHTING.

FIRE IS THE RESULT OF THREE ELEMENTS: FUEL, HEAT AND OXYGEN. A CANDLE BURNS BECAUSE A MATCH SUPPLIES THE HEAT, THE CANDLE WAX SUPPLIES THE FUEL, AND THE OXYGEN IS EVERYWHERE.

FIRE CAN BE EXTINGUISHED BY REMOVING ANY ONE OR MORE OF THESE THREE ELEMENTS, BUT THE SIMPLEST WAY IS TO REMOVE THE SOURCE OF OXYGEN. YOU CAN DEMONSTRATE THIS BY PLACING A TUMBLER OVER THE BURNING CANDLE: WHEN THE OXYGEN IN THE TUMBLER HAS BEEN CONSUMED, THE CANDLE FLAME GOES OUT!

CARBON DIOXIDE IN METAL CYLINDERS WORKS ON FIRE IN THE SAME WAY. THE CO_2, WHICH IS UNDER PRESSURE, EXPANDS 450 TIMES WHEN RELEASED AND IT LITERALLY "BLANKETS" FIRE BY DISPLACING THE OXYGEN IN THE AIR!

SINCE THE DAYS OF SAILING VESSELS, SAILORS HAVE DREADED THE CRY OF "FIRE!" MORE THAN ANYTHING ELSE AT SEA. HERE IS HOW THE NEW, ACCURATE CO_2 METHOD OF FIRE DETECTION AND EXTINCTION PROTECTS OUR MODERN LINERS, SUCH AS THE S.S. AMERICA AND THE QUEEN MARY.

FORMERLY, FIRES IN THE SHIP'S HOLD WERE DETECTED BY SNIFFING FOR SMOKE AT THE TOP OF AN OPEN PIPE WHICH LED INTO THE HOLD.

BUT TODAY ABOARD A MODERN LINER ----

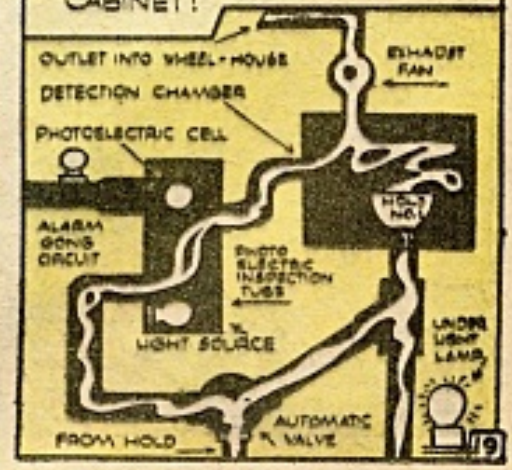
SIR, LIEUTENANT SMITH IS REPORTING FOR DUTY!
VERY WELL, MISTER! AND ONE OF THE FIRST THINGS I WANT TO EXPLAIN TO YOU IS OUR NEW FIRE DETECTION EQUIPMENT HERE ON THE BRIDGE!

THIS IS KNOWN AS THE RICH-AUDIO CABINET! IT NOT ONLY SHOWS SMOKE FROM COMPARTMENTS ALL OVER OUR SHIP, BUT RINGS AN ALARM BELL AS WELL WHEN FIRE BREAKS OUT!

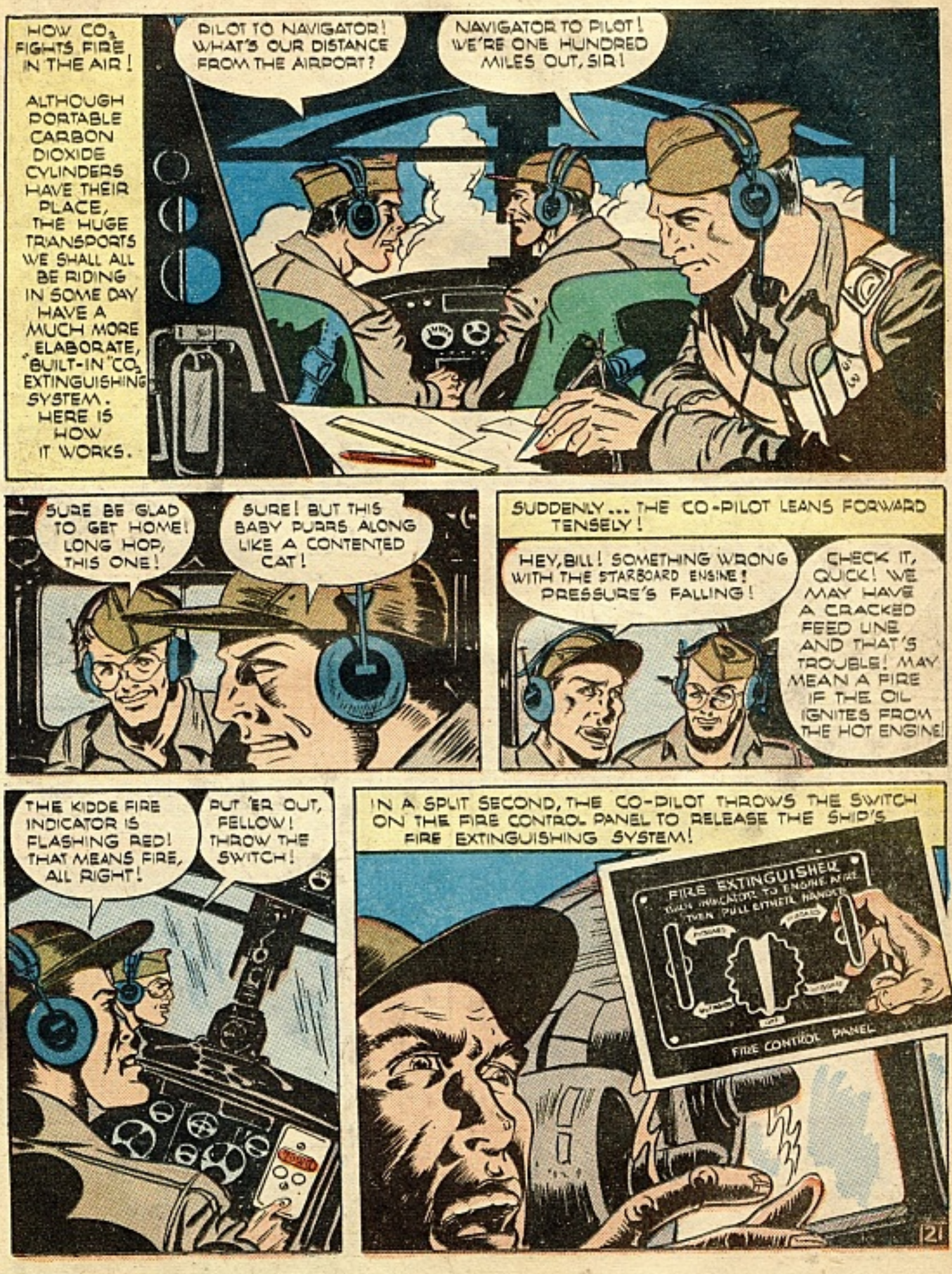
I SEE! WHEN SMOKE FROM ANY OF THE COMPARTMENTS IS DRAWN UP THROUGH THE CONNECTING TUBES, IT PASSES THROUGH THIS CABINET!

RIGHT! AND A PHOTOELECTRIC CELL IN THE CABINET SETS OFF THE ALARM AS WELL, WHEN SMOKE BREAKS THE CIRCUIT! HERE, I'LL SHOW YOU A DIAGRAM OF HOW IT WORKS

"WHEN THE CABINET PICKS UP THE LEAST TRACE OF SMOKE, THE ALARM RINGS, A RED LAMP IS LIGHTED AND THE NUMBER OF THE HOLD IS INDICATED ON A DIAL ON THE FACE OF THE CABINET!"

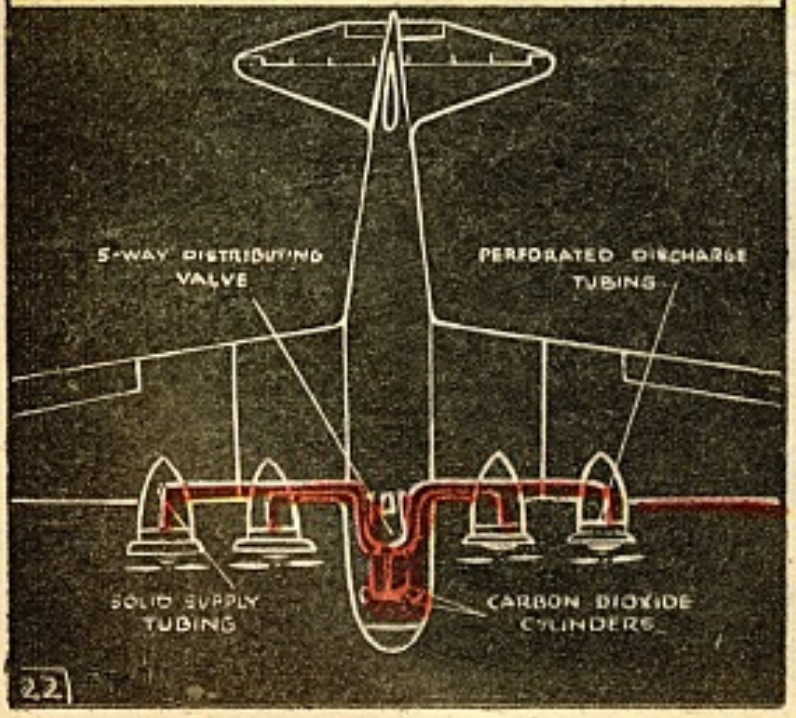


THEN WHAT HAPPENS? ONCE WE DETECT THE PRESENCE OF FIRE, I MEAN?
THAT'S WHEN CO_2 GOES INTO ACTION! WE SIMPLY SEND THE GAS INTO THE PROPER HOLD AND IT BLANKETS THE BLAZE! COME WITH ME AND I'LL SHOW YOU THE BATTERY OF KIDDE CYLINDERS!
NOTICE HOW COMPACTLY THE CYLINDERS FIT INTO A NARROW SPACE! THAT'S IMPORTANT ON ALL SHIPS!
YES, SIR! AND I NOTICE THAT THEY'RE IN A PART OF THE SHIP THAT'S PRETTY CENTRALLY LOCATED, TOO!
BELOW IS A DIAGRAM OF TYPICAL SHIP INSTALLATION.
SHIP PLANS NO. 42
CYLINDERS
AFT. DISTR. MANIFOLD
FORD. DISTR. MANIFOLD
ACCUMULATOR
CARBON DIOXIDE IS A WONDERFUL THING FOR PROTECTING LIFE AT SEA! WE EVEN USE PORTABLE CYLINDERS OF IT TO FIGHT DECK FIRES!
IT'S NICE TO KNOW, TOO, THAT THE GAS IS GOOD UNTIL IT'S USED! AND IT DOESN'T MATTER HOW LONG IT'S COMPRESSED IN THE CYLINDERS!
CARBON DIOXIDE ALSO SAVED THE LIVES OF HUNDREDS OF ALLIED OF PILOTS THAT WERE FORCED DOWN AT SEA, FOR CO_2 IS THE GAS THAT INFLATES LIFE RAFTS AS THE DISTINGUISHED MEMBERS OF THE "SEA SQ SQUATTERS CLUB" WILL ATTEST.

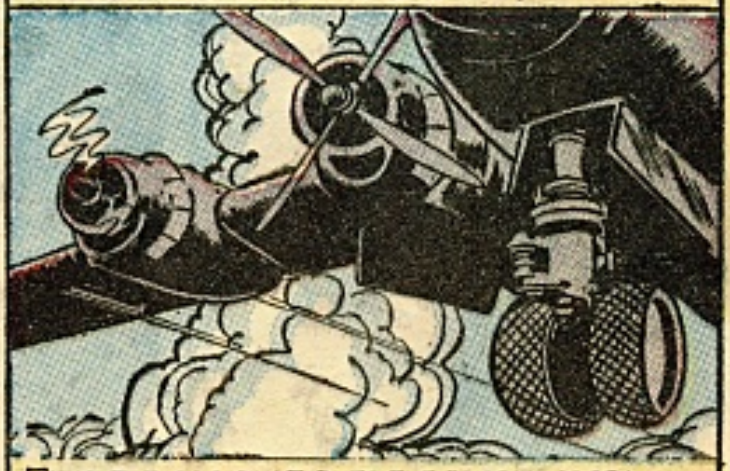

HOW CO_2 FIGHTS FIRE IN THE AIR!
ALTHOUGH PORTABLE CARBON DIOXIDE CYLINDERS HAVE THEIR PLACE, THE HUGE TRANSPORTS WE SHALL ALL BE RIDING IN SOME DAY HAVE A MUCH MORE ELABORATE, "BUILT-IN" CO_2 EXTINGUISHING SYSTEM. HERE IS HOW IT WORKS.
PILOT TO NAVIGATOR! WHAT'S OUR DISTANCE FROM THE AIRPORT?
NAVIGATOR TO PILOT! WE'RE ONE HUNDRED MILES OUT, SIR!
SURE BE GLAD TO GET HOME! LONG HOP, THIS ONE!
SURE! BUT THIS BABY PURRS ALONG LIKE A CONTENTED CAT!
SUDDENLY... THE CO-PILOT LEANS FORWARD TENSELY!
HEY, BILL! SOMETHING WRONG WITH THE STARBOARD ENGINE! PRESSURE'S FALLING!
CHECK IT, QUICK! WE MAY HAVE A CRACKED FEED LINE AND THAT'S TROUBLE! MAY MEAN A FIRE IF THE OIL IGNITES FROM THE HOT ENGINE!
THE KIDDE FIRE INDICATOR IS FLASHING RED! THAT MEANS FIRE, ALL RIGHT!
PUT 'ER OUT, FELLOW! THROW THE SWITCH!
IN A SPLIT SECOND, THE CO-PILOT THROWS THE SWITCH ON THE FIRE CONTROL PANEL TO RELEASE THE SHIP'S FIRE EXTINGUISHING SYSTEM!
FIRE EXTINGUISHER
FIRE CONTROL PANEL
21

A FLICK OF THE SWITCH HAS SENT A BLANKET OF CO_2 FROM THE CYLINDERS (LOCATED IN THE WINGS) THROUGH A CONNECTING HOSE INTO THE ENGINE! IN THREE SECONDS, THE FLAMING MOTOR HAS BEEN SMOTHERED BY THE GAS!

THE DIAGRAM SHOWS TYPICAL LAYOUT OF A FOUR ENGINE AIRPLANE FIRE EXTINGUISHING SYSTEM. COLORED RED LINES INDICATE TUBING LEADING FROM THE CO_2 CYLINDERS TO THE ENGINES.

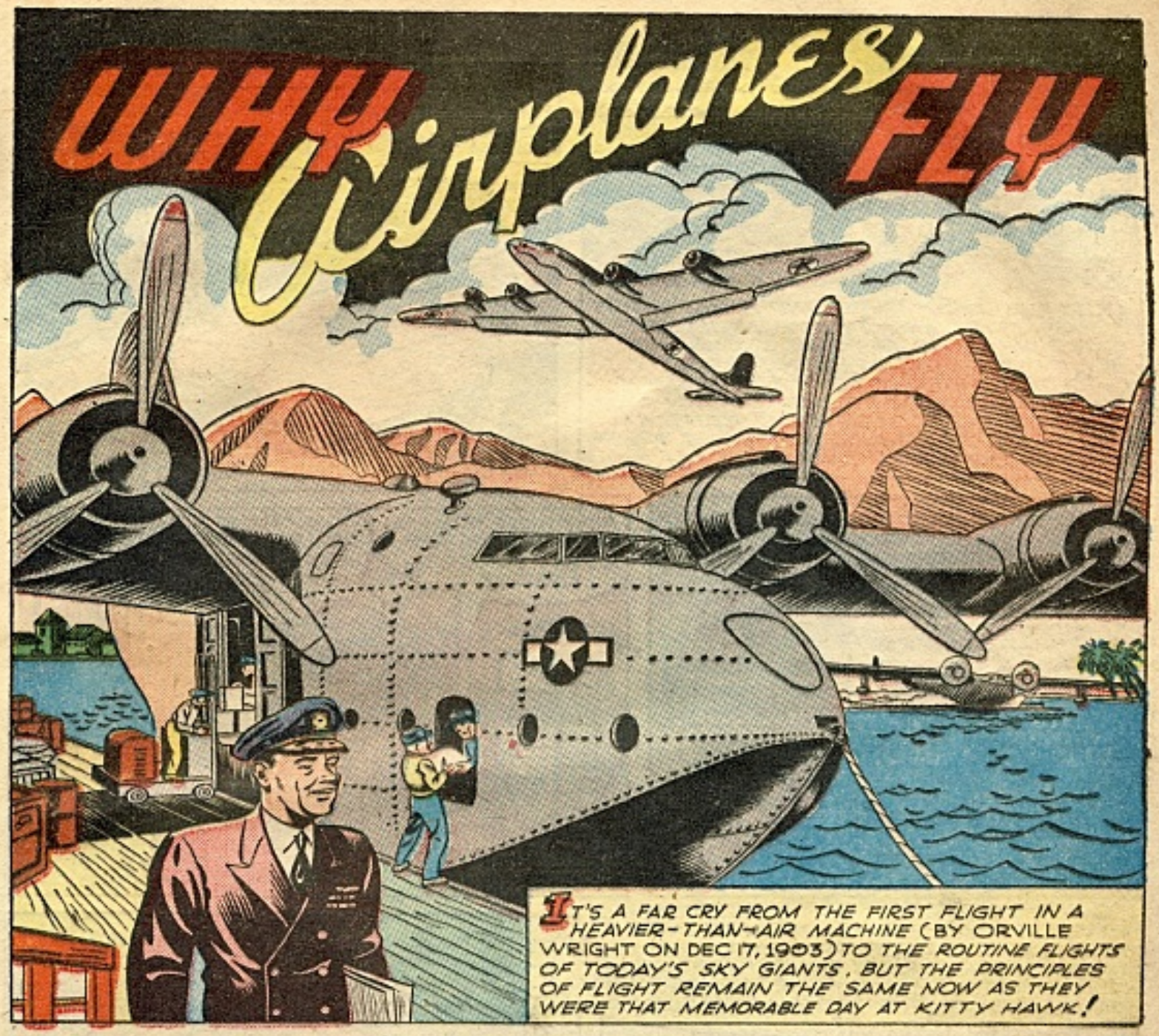


ALTHOUGH ONE MOTOR HAS BEEN TEMPORARILY KNOCKED OUT BECAUSE OF THE CRACKED OIL LINE, THE PLANE'S OTHER ENGINES EASILY BRING THE BIG SHIP SAFELY HOME – FREE FROM THE HAZARDS OF FIRE THANKS TO THE "SODA POP" GAS AND THE MODERN AIRPLANE WARNING SYSTEM!



THUS THE GAS THAT PUTS THE "POP" IN SODA POP IS DAILY PROTECTING LIVES FROM FIRE ON LAND, IN THE AIR AND ON THE SEA! SOON, AUTOMATIC EXTINGUISHING SYSTEMS OF CO_2 WILL ALSO BE INSTALLED AS REGULAR EQUIPMENT IN ORDINARY PASSENGER CARS!

WHY Airplanes FLY

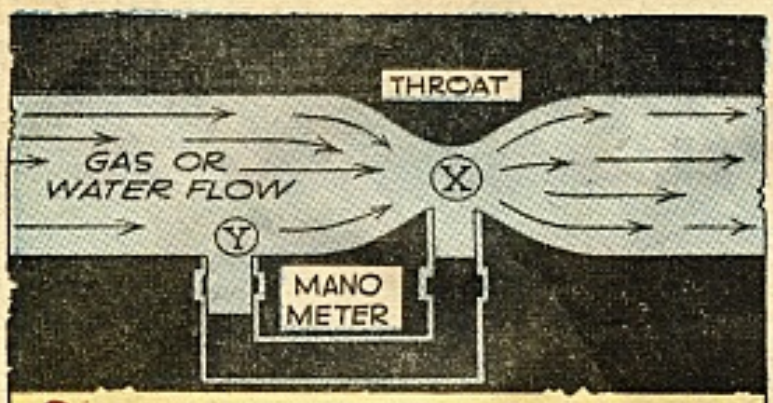


IT'S A FAR CRY FROM THE FIRST FLIGHT IN A HEAVIER-THAN-AIR MACHINE (BY ORVILLE WRIGHT ON DEC 17, 1903) TO THE ROUTINE FLIGHTS OF TODAY'S SKY GIANTS. BUT THE PRINCIPLES OF FLIGHT REMAIN THE SAME NOW AS THEY WERE THAT MEMORABLE DAY AT KITTY HAWK!

ONE DAY IN 1738, SWISS SCIENTIST **DANIEL BERNOULLI** WAS STROLLING....

HMM...NOW THAT'S ODD! WHY SHOULD THAT BOX BE PULLED *INTO* THE CURRENT WHERE IT FLOWS SWIFTLY, INSTEAD OF BEING SHOVED ASIDE?

CAN IT BE THAT SWIFTLY FLOWING WATER HAS LESS PRESSURE TO IT THAN THE SAME AMOUNT OF WATER THAT MOVES SLOWER? I WONDER....



BERNOULLI EXPERIMENTED AND FOUND HE WAS RIGHT! THE ABOVE DIAGRAM ILLUSTRATES WHAT HAS BECOME KNOWN AS BERNOULLI'S PRINCIPLE: THE VELOCITY (SPEED) OF WATER IS LOWER AT POINT Y, BUT THE PRESSURE IS GREATER. AT POINT X - WHERE THE "BOTTLENECK" CAUSES THE VELOCITY TO INCREASE, THE PRESSURE OF THE WATER DECREASES!!!

EXPERIMENTS WITH GASES PROVED THAT THE SAME PRINCIPLE HELD TRUE HERE!

IF THIS IS SO OF GAS, THEN IT MUST ALSO BE TRUE OF THE AIR WE BREATHE, FOR AIR IS SIMPLY MADE UP OF SEVERAL GASES!

CROSS SECTION OF WING ABOVE SHOWS HOW DIRECTION OF AIR IS CHANGED BY CURVED FRONT (LEADING) EDGE OF WING. BERNOULLI EXPERIMENTED WITH THESE WINGS IN 1739 AND AN ENGLISHMAN - FRANCIS WENHAM SUCCEEDED IN FLYING A CURVED WING MODEL PLANE AS EARLY AS 1871!

BOY! THESE NEW HIGH SPEED MOTORS ARE REALLY POWERFUL BABIES!

THEY HAVE TO BE, PAL! IF THEY DIDN'T GENERATE ENOUGH HORSEPOWER TO MAKE UP FOR THEIR WEIGHT, THIS SHIP WOULDN'T FLY!

YOU SEE, IT MAKES NO DIFFERENCE HOW LARGE A PLANE IS AS LONG AS THE TOTAL AREA OF ITS WINGS, ALONG WITH OTHER FACTORS, CAN SUPPLY ENOUGH LIFT TO KEEP IT IN THE AIR. AND IF THE ENGINES SUPPLY ENOUGH POWER, RELATIVE TO THE PLANE'S SIZE, TO KEEP IT GOING!

BECAUSE OF THIS BASIC PRINCIPLE, AIRPLANES FLY! THERE IS PRACTICALLY NO LIMIT TO THE SIZE PLANE THAT CAN BE BUILT, SO LONG AS THE MOTORS GENERATE ENOUGH HORSEPOWER IN RELATION TO THEIR WEIGHT! (ABOVE) THE NEW "HUGHES HERCULES" BEING BUILT. IT WILL USE EIGHT ENGINES, WEIGH 212 TONS AND HAVE GASOLINE CAPACITY OF 14,000 GALLONS!!

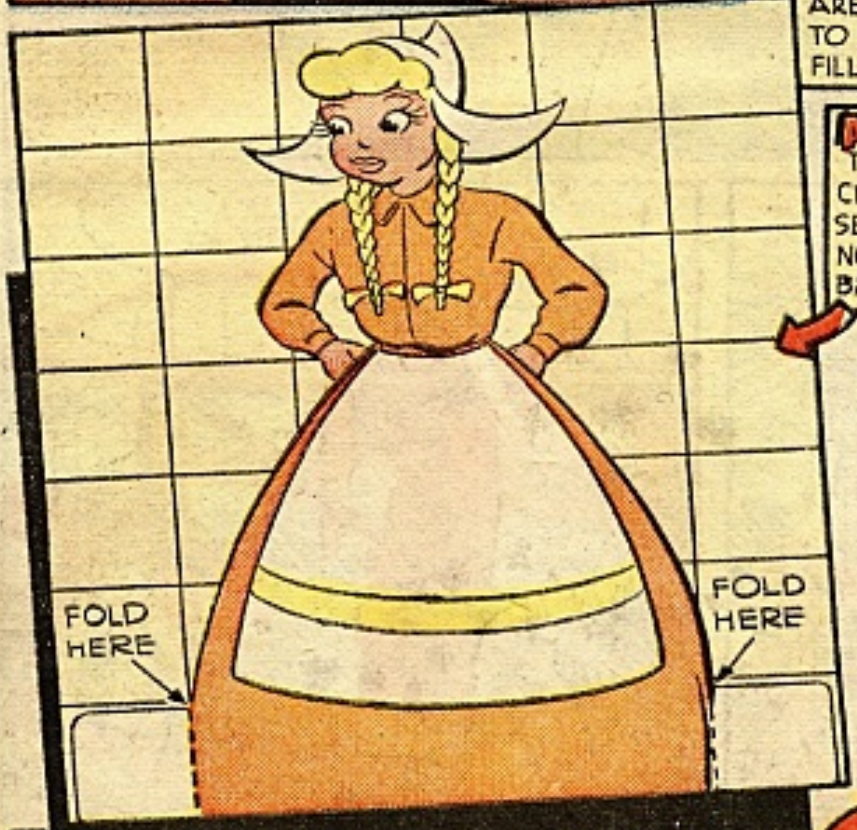
HOW TO MAKE AN ACCURATE WEATHER FORECASTER

HOME SCIENCE

ALL THE MATERIALS NEEDED FOR THIS WEATHER FORECASTER ARE A SMALL AMOUNT OF A CHEMICAL CALLED **COBALT BLUE**, A SMALL PIECE OF CLOTH AND A LITTLE PATIENCE WITH NEEDLE AND THREAD.

IF YOU CAN OBTAIN A SMALL CLOTH SACK (ABOUT THE SIZE OF THOSE IN WHICH TOBACCOS ARE SOMETIMES PACKED) YOU WON'T NEED TO SEW ONE TOGETHER. TAKE SUCH A BAG AND FILL IT WITH THE COBALT BLUE.

AFTER FILLING THE BAG WITH THE CHEMICAL, SEW IT SECURELY SO THAT NONE OF THE COBALT WILL SPILL!

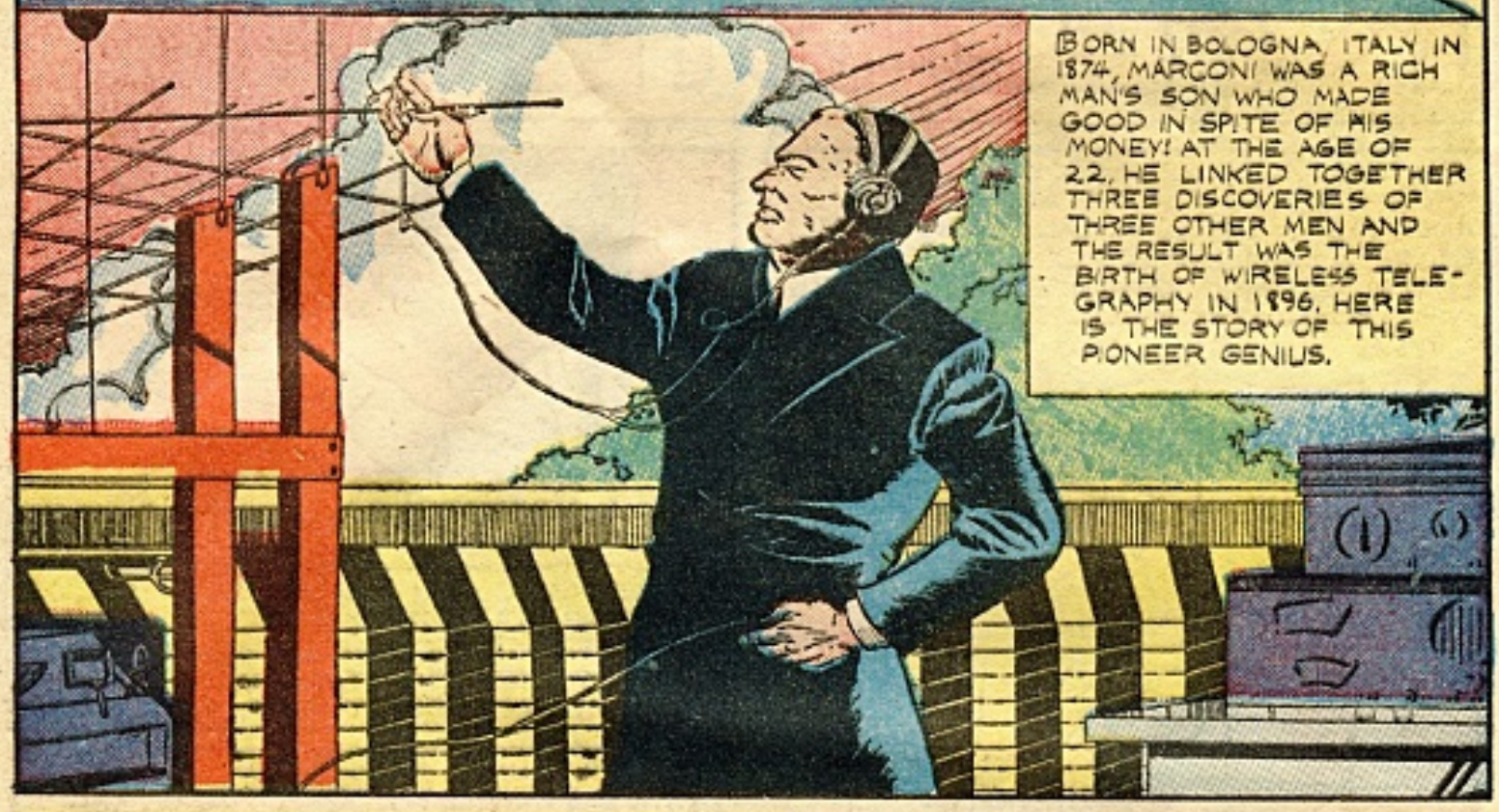


IF YOU WANT TO DRESS UP YOUR WEATHER FORECASTER CUT OUT THE FIGURE ABOVE AND TIE THE BAG TO IT SO AS TO FORM AN "APRON" FOR THE GIRL. BY MOUNTING ON HEAVY CARDBOARD AND BENDING BACK SIDE FLAPS, YOU WILL HAVE A WEATHER FORECASTER THAT SITS UP!

WHEN THE WEATHER IS FAIR, THE APRON WILL REMAIN BLUE.
WHEN THE APRON TURNS VIOLET, A CHANGE THEN IS DUE.
WHEN IT BECOMES VERY RED, EXPECT A STORM TO BREW.

MARCONI

INVENTOR OF WIRELESS



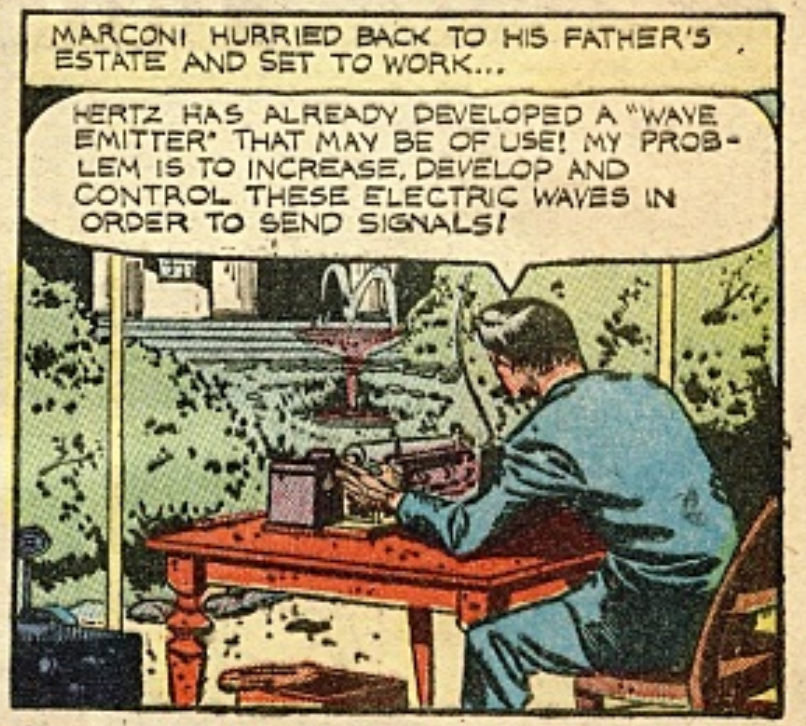
BORN IN BOLOGNA, ITALY IN 1874, MARCONI WAS A RICH MAN'S SON WHO MADE GOOD IN SPITE OF HIS MONEY! AT THE AGE OF 22, HE LINKED TOGETHER THREE DISCOVERIES OF THREE OTHER MEN AND THE RESULT WAS THE BIRTH OF WIRELESS TELEGRAPHY IN 1896. HERE IS THE STORY OF THIS PIONEER GENIUS.

ONE SUMMER WHILE MARCONI WAS VACATIONING IN THE ITALIAN ALPS...
THIS MOUNTAIN AIR IS WONDERFUL, BUT I'M ANXIOUS TO GET BACK TO MY SCIENCE STUDIES!
ARIA'S INN

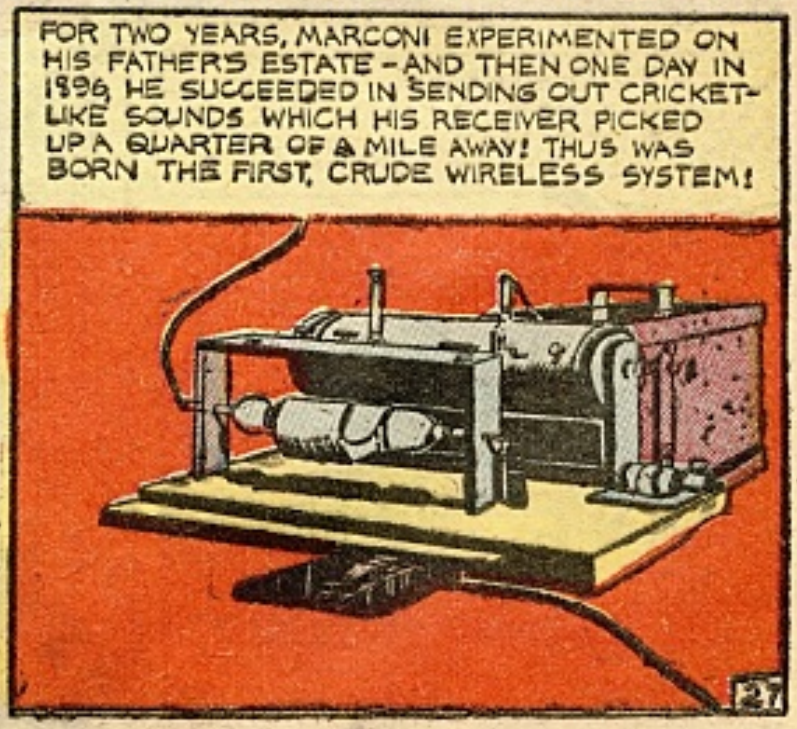
HM! AN ELECTRICAL JOURNAL! I WONDER IF THERE'S ANYTHING OF INTEREST IN IT?

MOST INTERESTING ARTICLE BY THIS FELLOW HEINRICH HERTZ! THESE ELECTRICAL WAVES MIGHT BE SENT IN THE FORM OF MESSAGES - IF I COULD FIGURE A WAY TO DO IT!

THERE MUST BE A WAY! I'M GOING TO END MY VACATION RIGHT NOW AND GO HOME AND WORK ON IT!


MARCONI HURRIED BACK TO HIS FATHER'S ESTATE AND SET TO WORK...
HERTZ HAS ALREADY DEVELOPED A "WAVE EMITTER" THAT MAY BE OF USE! MY PROBLEM IS TO INCREASE, DEVELOP AND CONTROL THESE ELECTRIC WAVES IN ORDER TO SEND SIGNALS!

BY LINKING UP THE WAVE EMITTER WITH AN INDUCTION COIL AND A REGULAR TELEGRAPH KEY - AND SOME STORAGE BATTERIES TO GENERATE THE ELECTRICITY - I MAY YET WORK THIS OUT!

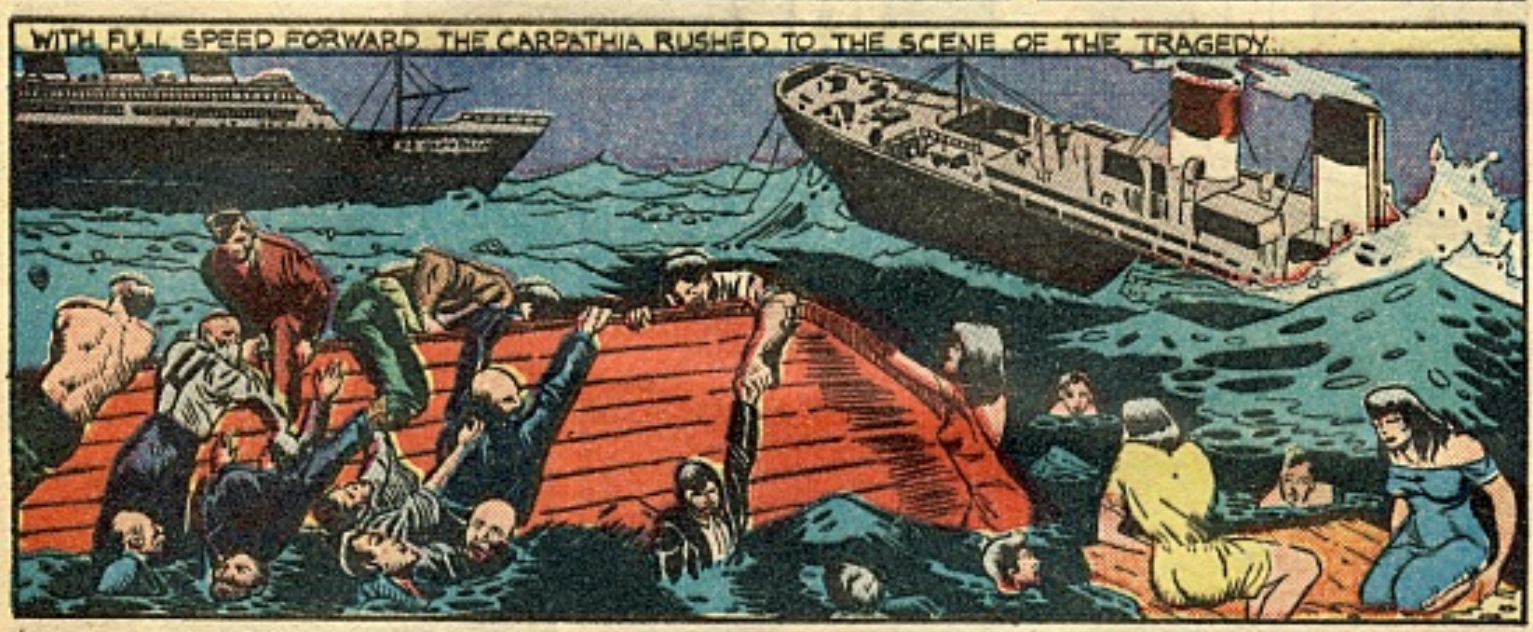

FOR TWO YEARS, MARCONI EXPERIMENTED ON HIS FATHERS ESTATE - AND THEN ONE DAY IN 1896 HE SUCCEEDED IN SENDING OUT CRICKET-LIKE SOUNDS WHICH HIS RECEIVER PICKED UP A QUARTER OF A MILE AWAY! THUS WAS BORN THE FIRST, CRUDE WIRELESS SYSTEM!
27

1899 - THE OFFICES OF THE NEW YORK HERALD...
THIS GUY MARCONI IS SETTING EUROPE ON ITS EAR WITH HIS WIRELESS MACHINE!
YES, I'VE BEEN READING ABOUT HIM. SENT MESSAGES ACROSS THE ENGLISH CHANNEL, DIDN'T HE?
THAT'S RIGHT! AND I'VE GOT AN IDEA! THE AMERICA CUP YACHT RACE IS SCHEDULED TO TAKE PLACE OFF THE JERSEY COAST! LET'S HIRE HIM TO TRANSMIT BULLETINS ON IT BY WIRELESS! THAT'S NEVER BEEN DONE BEFORE!
MARCONI ARRIVED IN NEW YORK IN THE AUTUMN OF 1899...
I THANK YOU GENTLEMEN FOR INVITING ME TO TRANSMIT THESE BULLETINS OF THE RACE! IT WILL HELP PROVE THE VALUE OF WIRELESS!
THAT'S WHAT WE FIGURED! ANYTHING YOU NEED IN THE WAY OF HELP IS YOURS FOR THE ASKING!
THIS RECEIVING SET IS IN FINE WORKING ORDER. I SHALL TRANSMIT THE BULLETINS FROM A SPOT NEAR THE YACHT RACE AND YOU'LL PICK THEM UP HERE! THERE CAN BE NO FAILURES!
THE DAY OF THE RACE...
I UNDERSTAND A FELLOW BY THE NAME OF LEE DE FOREST IS ALSO WIRELESSING BULLETINS FOR ANOTHER PAPER TODAY!
THAT WILL HAVE NO EFFECT ON US! WE HAVE BETTER EQUIPMENT!
MARCONI AND DE FOREST - BOTH SENDING OUT BULLETINS - FORGOT THEY WERE BOTH ON THE SAME WAVE LENGTH AND "JAMMED" EACH OTHER'S MESSAGES! SO THE FIRST USE OF WIRELESS IN SENDING NEWS FLASHES WAS A FAILURE - BUT NOT FOR LONG!
WHAT KIND OF MONKEY BUSINESS IS THIS? IT SOUNDS LIKE A DOG FIGHT!
DON'T ASK ME! THE RECEIVER OPERATOR CAN'T MAKE OUT A THING MARCONI'S SENDING!

BY 1912, MOST SHIPS WERE MAKING USE OF WIRELESS TO PREVENT DISASTER AT SEA...
MARCONI, I SEE THE TITANIC HAS STARTED HER MAIDEN VOYAGE FROM ENGLAND TO AMERICA!
A GREAT SHIP, THAT ONE!
WELL, IN THAT CASE, ABOUT THE ONLY GOOD YOUR WIRELESS WILL DO ON HER IS TO SEND OUT BIRTHDAY GREETINGS OR SOMETHING!
PERHAPS, BUT IT IS BETTER THEY SHOULD BE PREPARED FOR ALL EMERGENCIES, AND WIRELESS IS THE BEST PRECAUTION I KNOW OF!
ON THE NIGHT OF APRIL 15TH, THE TITANIC IS IN THE MIDDLE OF THE NORTH ATLANTIC...
SUDDENLY...!!!
WHAT HAPPENED? ARE WE SINKING?
I DON'T KNOW! THE TITANIC IS SUPPOSED TO BE UNSINKABLE, BUT I'M SCARED!
WHILE IN THE WIRELESS ROOM OF THE RAPIDLY SINKING LUXURY LINER, "SPARKS" SENDS OUT THE URGENT LETTERS "CQD-THE EARLY CALL LETTERS LATER CHANGED TO "SOS"
29

SOME 150 MILES AWAY THE S.S. CARPATHIA PICKED UP THE FRANTIC CALL FROM THE TITANIC

TITANIC STRUCK AN ICEBERG AND IS SINKING! HERE'S THE LOCATION! GET IT TO THE CAPTAIN RIGHT AWAY!

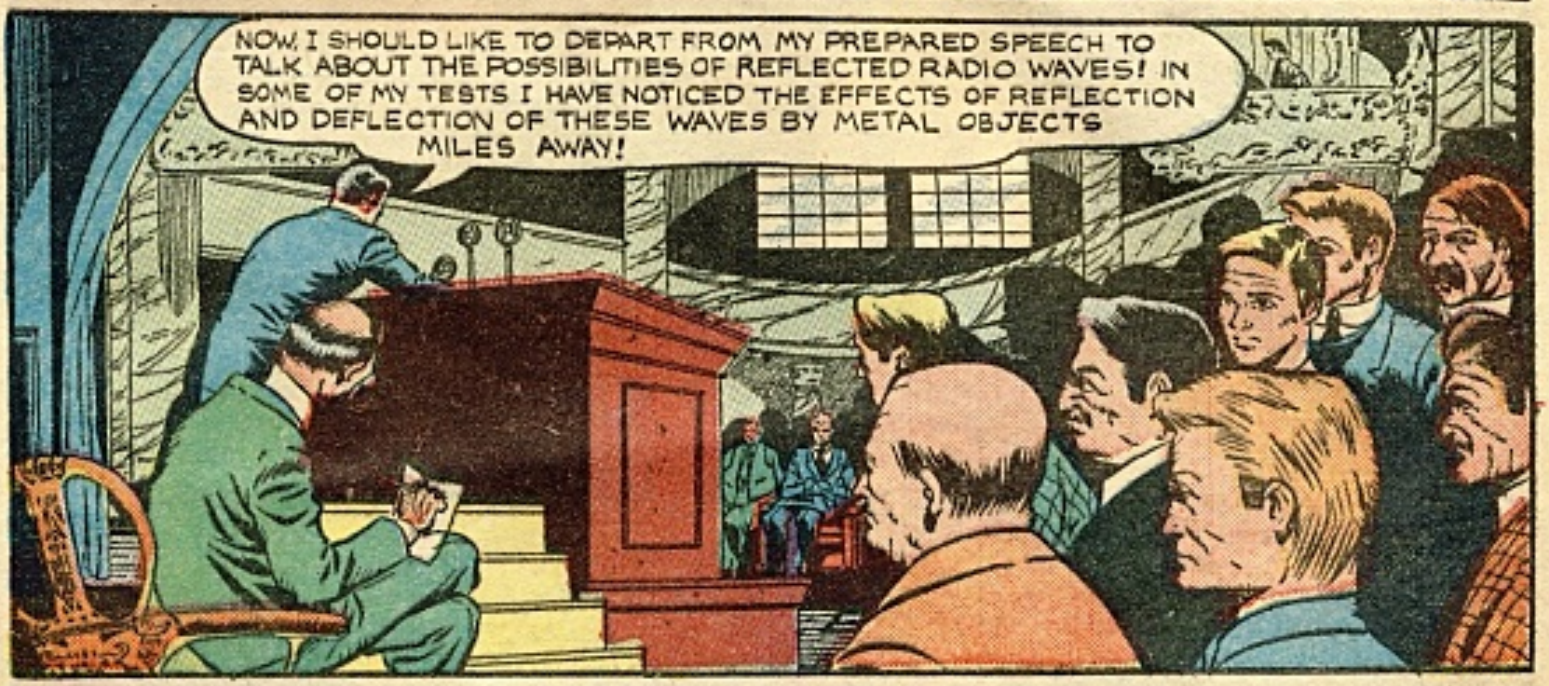

WITH FULL SPEED FORWARD THE CARPATHIA RUSHED TO THE SCENE OF THE TRAGEDY...

GET THEM BELOW! MAKE THEM WARM AND COMFORTABLE! WE HAVE PLENTY OF ROOM FOR ALL!
AYE, AYE, SIR!

WHEN THE RESCUE SHIP ARRIVED IN NEW YORK HARBOR...
EVERYONE OF THOSE SURVIVORS WAS PICKED UP BECAUSE OF YOUR WIRELESS, MARCONI
FOR THAT ALONE, I AM THANKFUL I WORKED IT OUT!

THUS MARCONI RECEIVED ONE OF THE GREATEST OVATIONS OF HIS CAREER FROM THE GRATEFUL SURVIVORS WHOSE LIVES WERE SPARED BY THE MAGIC OF WIRELESS!
VIVA!
VIVA MARCONI!
WE OWE OUR LIFE TO YOU!
TI DOBBIANO LA VITA!

GENTLEMEN, I WOULD LIKE TO URGE YOU TO TURN YOUR ATTENTIONS TO THE POSSIBILITIES OF RADIO-SHORT WAVES, AND TO GET OUT OF THE BLIND ALLEY YOU ARE FOLLOWING IN THE LONG WAVE SPECTRUM!


NOW, I SHOULD LIKE TO DEPART FROM MY PREPARED SPEECH TO TALK ABOUT THE POSSIBILITIES OF REFLECTED RADIO WAVES! IN SOME OF MY TESTS I HAVE NOTICED THE EFFECTS OF REFLECTION AND DEFLECTION OF THESE WAVES BY METAL OBJECTS MILES AWAY!

IT SHOULD BE POSSIBLE TO RADIATE A BEAM OF THESE RAYS IN ANY DIRECTION, WHICH RAYS, IF COMING ACROSS A METALLIC OBJECT SUCH AS ANOTHER STEAMER OR SHIP, WOULD BE REFLECTED BACK TO A SCREEN ON THE SENDING SHIP— REVEALING THE PRESENCE OF THE OTHER SHIP EVEN IN FOG OR THICK WEATHER!

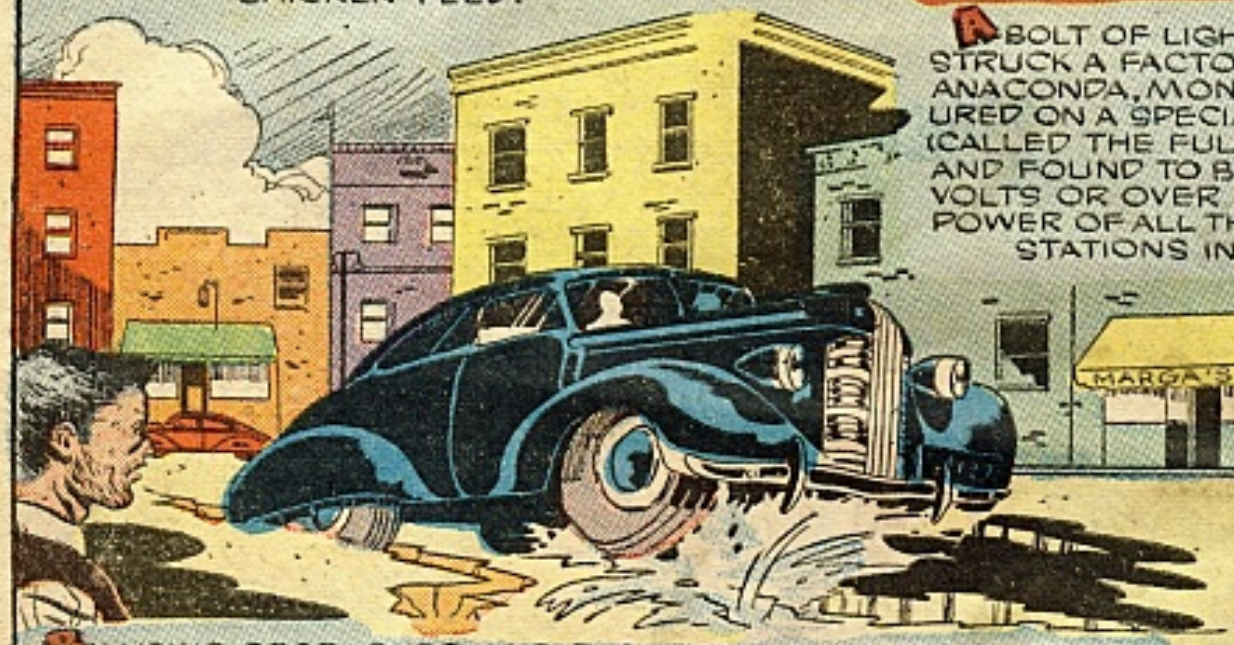
WITHOUT USING THE WORD "RADAR" WHICH WAS THEN NOT EVEN IN OUR VOCABULARY- MARCONI THE GENIUS OF WIRELESS CLEARLY FORESAW IT'S COMING AND THE USEFULNESS TO MANKIND SUCH A DEVELOPMENT WOULD BRING! ALL THIS TWENTY YEARS BEFORE THE ACTUAL DEVELOPMENT OF RADAR!

NEXT ISSUE SCIENCE COMICS WILL PRESENT THE UP-TO-THE MINUTE STORY OF RADAR!

SCIENCE ODDITIES

MUSSELS GATHERED FROM THE BEDS OFF TIDE WATER, VIRGINIA, ARE GIVEN A SPECIAL ULTRA-VIOLET TREATMENT TO SECURE VITAMIN D FOR CHICKEN FEED!

A BOLT OF LIGHTNING WHICH STRUCK A FACTORY CHIMNEY IN ANACONDA, MONTANA, WAS MEASURED ON A SPECIAL MACHINE (CALLED THE FULCHRONOGRAPH) AND FOUND TO BE 15,000,000 VOLTS OR OVER 50 TIMES THE POWER OF ALL THE GENERATING STATIONS IN THE U.S.A!

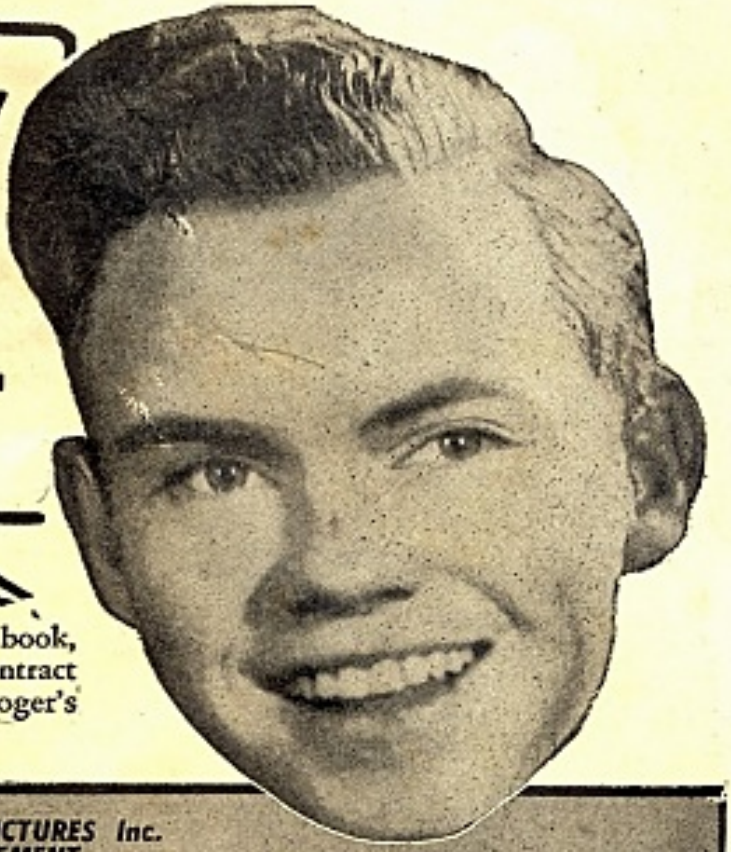


BY USING GEOPHONES AND PHOTO FLOW INSTRUMENTS TO DETECT LEAKAGES IN ITS CITY WATER SYSTEM, BOSTON IS NOW SAVING ABOUT 4,000,000 GALLONS OF WATER DAILY THAT FORMERLY WAS WASTED!

IN CANADA FOUR MILLION FISH ARE CAUGHT YEARLY - EVERY BIT OF EACH FISH IS USED IN ONE WAY OR ANOTHER - FOR EXAMPLE THE HEADS AND TAILS ARE GROUND INTO CATTLE FEED, THE SKIN OIL IS USED FOR PURIFICATION PURPOSES, AND THE SCALES ARE SOLD TO IMITATION PEARL MAKERS - THE PEOPLE EAT WHAT'S LEFT!

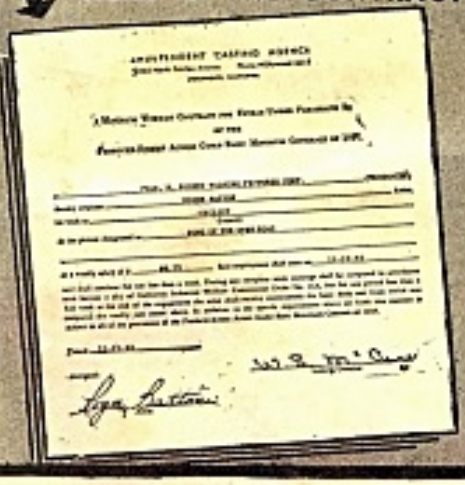
"PACKAGED COAL" - THREE INCH CUBES MADE OF SMALL PARTICLES OF ANTHRACITE AND BITUMINOUS, HELD TOGETHER BY AN OIL-BASE BINDER AND WRAPPED IN PAPER - MAY SOON DO AWAY WITH THE OLD TIME COAL BIN. THEY COME IN SEVEN LB. PACKAGES!

BOYS AND GIRLS! HERE'S HOW I LANDED A MOVIE CONTRACT



"Ever since I can remember," says Roger Batton of Brownwood, Texas, "my ambition was to be a movie star. Now, thanks to Judith Allen's book, HOW TO GET INTO THE MOVIES, I have signed a contract with Monogram Pictures for a swell part in the Charles Roger's production, SONG OF THE OPEN ROAD."

HERE IS THE CONTRACT



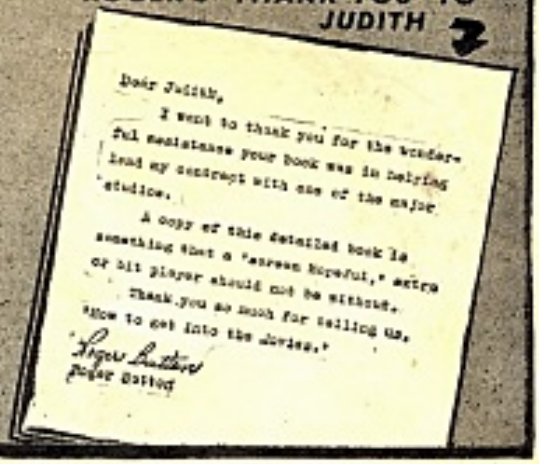
WARNER BROS. PICTURES Inc. EMPLOYEES' STATEMENT

WHAT THE PAPERS SAY

Roger Batton Is In Florida For Filming Of Hollywood Picture

Roger Batton, son of Mr. and Mrs. R. E. Batton, 2207 Avenue D, who is now in Hollywood under

ROGER'S 'THANK YOU' TO JUDITH



Dear Judith,

I want to thank you for the wonderful assistance your book was in helping land my contract with one of the major studios.

A copy of this detailed book is something that a "screen hopeful," extra or bit player should not be without.

Thank you so much for telling us, "How to get into the Movies."

Roger Batton

WANTED! *Boys and Girls for the Movies!*

There are plenty of opportunities in Hollywood, but you must know how to take advantage of them.

Let Judith Allen, star of 52 pictures, teach you as she taught Roger Batton. Miss Allen, who has starred with Bing Crosby, Walter Pidgeon, Nelson Eddy, Gene Autry, Cecil B. DeMille, Shirley Temple, has written a book "How to Get Into the Movies." In it she teaches you many of the things you must know and do to get started in Hollywood. She teaches you methods that have been used by herself and such stars as Jean Arthur, Veronica Lake, Lana Turner, Joan Crawford, Joe E. Brown, Brian Aherne, Elizabeth Frazer and many others.

Send for Judith Allen's book today. It may land you a movie contract just as it did Roger Batton. SEND NO MONEY. Fill in coupon below and mail today to Judith Allen, 117 West 48th St., N. Y. 19, N. Y. Dept 85. When Postman delivers your book pay him $1 plus postage and C.O.D. charges. If you send cash with order, Judith Allen will pay all postage AND IN ADDITION, AUTOGRAPH YOUR COPY. Guarantee: If not pleased, return book within 5 days and get your $1 back.

MAIL COUPON NOW

Miss Judith Allen
117 W. 48th St., N. Y. 19, N. Y., Dept. 85

Dear Miss Allen: Please send me your book, "How to Get Into the Movies." I will pay the postman $1 plus postage and C.O.D. charges. It is understood that if I am not satisfied I may return the book within 5 days and get my money back.

NAME .....
(PLEASE PRINT)

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☐ Check here if you enclose $1 to save all postage charges and have Judith Allen autograph your book. Same money-back guarantee applies. Canadian orders must be accompanied by cash or money order.

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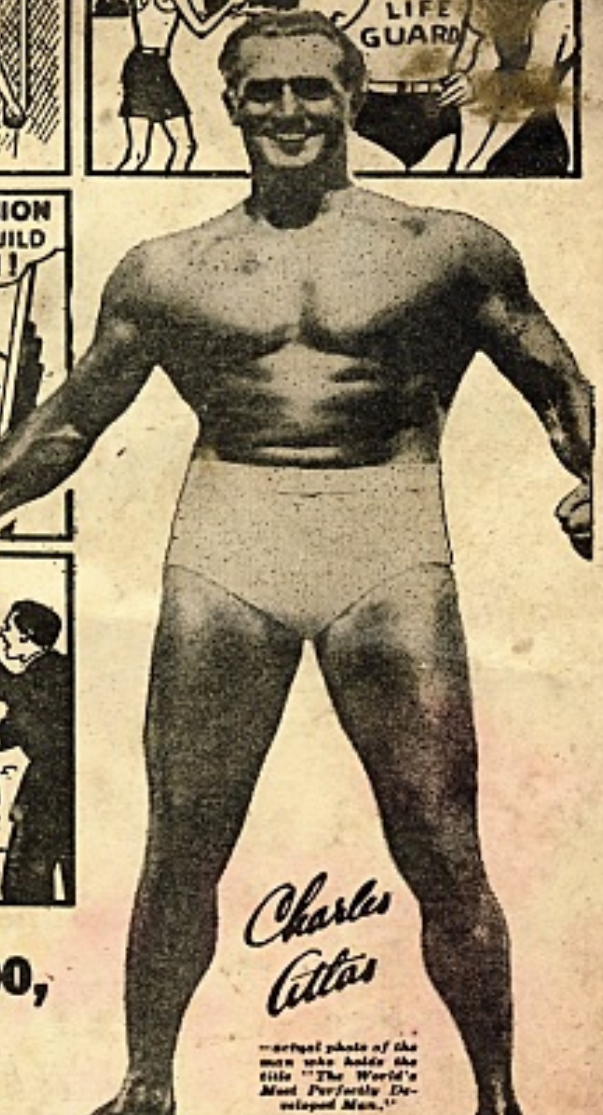

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